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SUPPLEMENT.

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THE GREAT EXHIBITION.

THE journals which report the proceedings at the Crystal Palace have, perhaps, a difficult task to convey to the most distant parts of the world a full, true, and particular account of the wonders of art and industry exhibited within; but they have no difficulty in reporting its success. The Exhibition continues to grow in favour. Upon that point there can be no mistake. As its popularity increases, the views of its founders and of the more enlightened portions of the public, as to its future usefulness, extend. Day by day the circle widens. The money pours in at the rate of nearly £20,000 per week; so that the Executive Committee, instead of being in any difficulty for the ways and means of making themselves straight with the world, will shortly be in possession of a very handsome surplus. We notice with pleasure, among the first developments of plans which have suggested themselves, that a series of lectures within the Building have been announced. Professor Cowper will lecture on the section of machinery; Professor Ansted will treat of minerals and raw produce; and Mr. O'Brien, who has taken charge of the philosophical instruments, will lecture on that department. Arrangements will doubtless be made at a more advanced period of the season, to enable the working men of the provinces not only to see these wonders of human ingenuity, but to hear the lectures of those competent teachers on the application of the arts to the science of humanity. Furthermore, we expect that colleges and schools will be enabled to give their students a similar advantage. In fact, the manifold uses of the Exhibition in a national point of view are only beginning to be discovered; so that the more the subject is considered, the greater and more beneficent appear the purposes to which it may be directed. Nationally and internationally, it is equally interesting. What the ultimate result may be, we will not presume even to hint; but the present results must be allowed to be in the highest degree gratifying both to the clear-sighted energy and perseverance in a good object of those who founded the Exhibition, and to the national character.

In resuming our account of the several sections, the first notice is due to the productions of our French neighbours.

The French department is at length beginning to make a display worthy of the nation which assumes, not without reason, to set an example of taste in all manufactures susceptible of artistic treatment.

A great deal still remains to be done. The galleries are only half furnished, and the hammer and saw are still at work in the bays leading from the grand avenue; but enough has been arranged to attract and rivet the attention of crowds who had begun to fear that France had retired from the contest.

The fact is, that the French, who have been accustomed to teach all the cities of Europe how to get up exhibitions of industry, accepted our invitation without being prepared either for our punctuality or powers of display. They expected to find a convenient, even a magnificent building, filled with solid and useful articles of commerce, fine machinery, strong calico, plenty of polished needles, locks, bars, and bolts; but, as regarded the ornamentation of the Palace, that task they fully believed was reserved for them; and many of the Parisian manufacturers calculated, that, as the Exhibition could have neither beauty nor interest without the beautiful contributions from the workshops of Paris, if they were not ready for England, why England must wait for them. The result has been the exact opposite of their expectations. The 1st of May presented a long series of beautiful, combined with useful, manufactures, and would have been just as successful if a temporary curtain had been drawn over the space assigned to France; yet now that the French manufactures are coming out in great force, presenting each day some new attraction, we receive it with all the satisfaction of an unexpected discovery—we feel that we have hit upon a new vein of pleasure, when we thought ourselves already overflowingly rich.

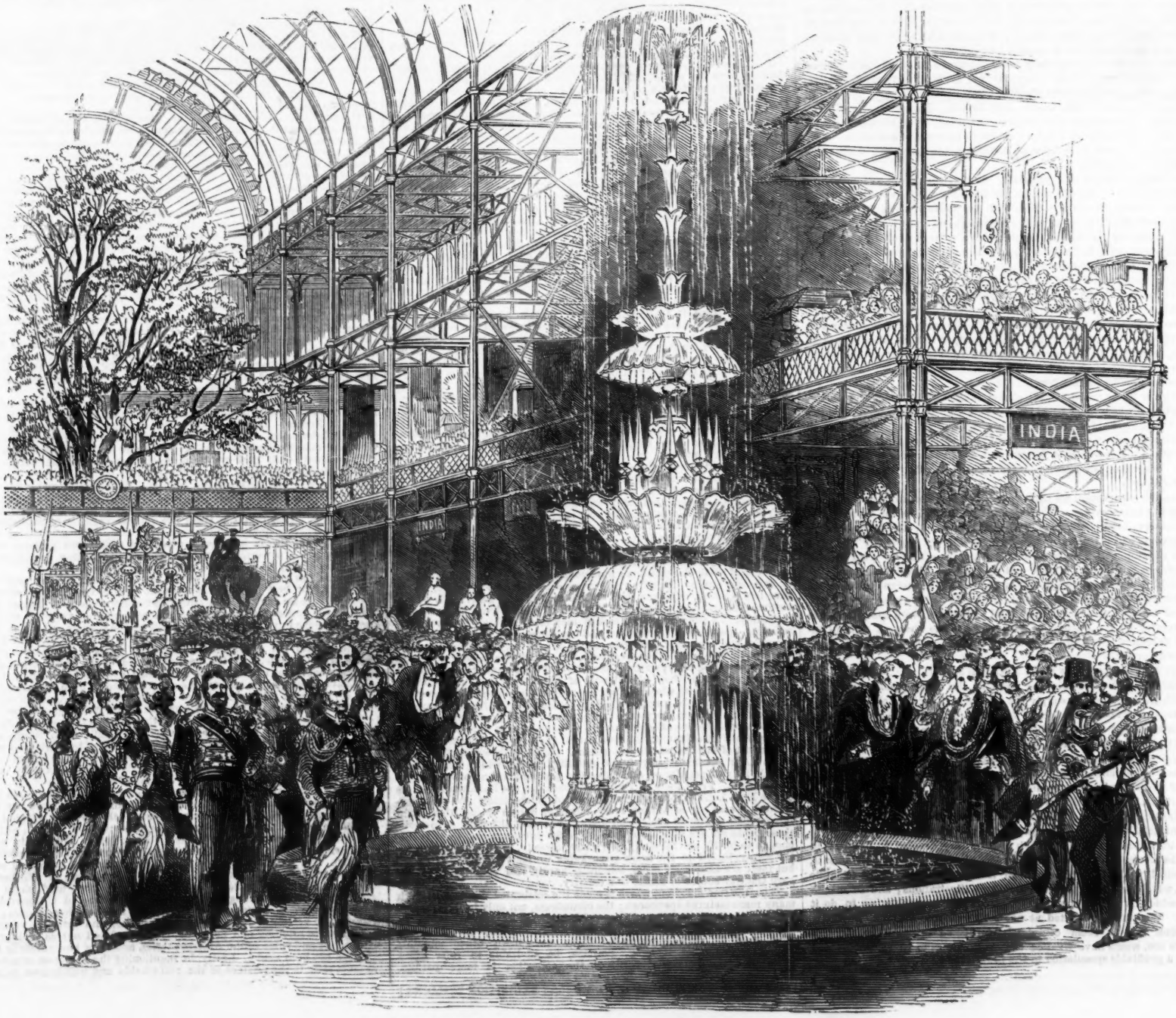
On turning toward the French department, after passing the exquisite carvings in white and red wood exhibited by Switzerland, our attention is arrested by a case containing the treasures of the Queen of Spain's jewellery. They amply justify the reputation that Parisian artists in precious stones have so long enjoyed. The leading objects are a suite of diamonds and pearls, arranged with green enamel into a representation of acorns and oak-leaves. The coronal for a head ornament seems to us more beautiful, more a work of true art, than anything in the gorgeous display in the British jewellery. Next to these stand the crowns, sceptre, state-sword, and other Royal insignia belonging to the gentlemen who manufactured the coronation jewels for the Emperor of Hayti.

What triumph of art manufacture the French may next unpack, it is impossible to guess; but, at present, the crowning glory of the French collection is the case of Froment-Meurice. Among a crowd of exquisitely beautiful articles is a toilet-table (presented to the Duchess of Parma) of buhl, silver, and enamel, supported by silver figures, with a looking-glass surrounded by a frame of enamels of the arms of the two families. Every part of this extraordinary piece of furniture is a marvel of carving, engraving, and sculpture. With the toilet-table are costly sacramental vessels, jewel-boxes, flowers in precious stones, hunting swords, and such a series of exquisite and fantastic designs worked out in precious metals as we never remember to have seen collected together as the property of one person before. The times of Benvenuto Cellini seem revived in this display. On a future occasion we shall give illustrations and detailed descriptions.

French jewellery is all stamped with a mark which denotes to those initiated the exact value of the gold employed. There is a first-class, second-class, and third-class stamp, which the manufacturers are obliged to obtain before offering their wares for sale. The advantage to the manufacturers of first-class articles is great. They are secure against the competition of those who could imitate their latest productions in an inferior kind of gold.

We have no such regulation. Pure gold, which is seldom used for ordinary jewellery, bears the Hall-mark; but in what is commonly called "jeweller's gold," there is between one maker and another a difference of value, without any perceptible difference in appearance, equal to at least fifty per cent. No doubt, the French regulation is a great protection and encouragement to the manufacturer of good articles in tasteful shapes; but our manufacturers of cheap jewellery at Birmingham and elsewhere carry on their operations on so large and so rapid a scale. that it would be impossible to introduce such a restriction without seriously impeding their trade.

The imitation jewellery displayed by the French in the South Bay is



1.—THE TRANSEPT OF THE CRYSTAL PALACE ON THE 1ST OF MAY.

very tasteful: the imitations of pearls and precious stones are extremely clever. In the metal workmanship of false jewellery since the introduction of electrotype, we probably excel them; and, altogether, this department is better known to us through the shops of Regent-street and of our principal watering-places, than the first-class work, like the Queen of Spain's diamonds, which have excited so much attention ever since they were unpacked.

In the centre of the room, the sides of which are principally occupied by jewellery, a good deal of plate is set out. Plate is not so much used in France as in England, and, with few exceptions, the workmanship is inferior; but there are several articles which art of a high order has been employed to embellish. We would note a small silver ornament for perfume, chased elaborately with grotesques, and surmounted by a figure, which stands opposite the imitation diamonds on the east side of the room. On a table in the centre is a large tea-urn, in oxydized silver, with very handsome tea services around it; and close to it a perfect gem, in the shape of a Turkish coffee-pot, in oxydized silver inlaid with gold, surrounded by a cluster of tiny china cups, in stands of the same metal, on a salver elaborately engraved. It is just the thing for a buhl table in a beauty's boudoir.

The French manufacturers, in all these works, have a great advantage in the demand which exists among the wealthy classes, who are their customers, for original designs, whether in plate or in bronze. A class of artists in Paris devote themselves to supplying these designs; and a class of manufacturers make a reputation by continually publishing new designs. In England, until very lately (with the exception of the period when Rundell and Bridge employed Flaxman), we were content with repeating stereotyped conventionalities.

A short time since, one of our engineering firms wanted an original design made and executed in bronze, for a compass of an expensive kind. He was unable to find, in London, any artist and bronze-caster accustomed to work in unison. He went over to Paris, and obtained what he required in twenty-four hours. This compass, supported on two bronze dolphins, may be seen in the North-west Gallery, among the philosophical instruments.

The manufacturers of such articles as the silver toilette-table of the Duchess of Parma have the use of the talent trained by the demand for Paris bronzes, of which a large collection is displayed.

In other ornamental metal-work the French exhibit a number of very rich lamps, chandeliers, grates, dogs for burning wood, and church ornaments. The lamps are chiefly on the carcel principle, where clockwork or a spring continually pumps up oil to a due level. The bulbous form of this contrivance affords room for a good deal of ornament, of which the art manufacturers have skilfully availed themselves.

We cannot conscientiously say anything in favour of a large case full of cutlery. The forms are not elegant. Of the cutting merit there is no opportunity of judging.

In porcelain the strength of the French lies in the finest qualities. From the late Royal, now National Manufactory at Sèvres, some splendid specimens of ornamental china, of great size, exquisitely painted, have been contributed, including pairs of very large vases of rich blue and pink, and other difficult colours, painted from designs of the first modern artists, and breakfast services fit for the Queen of the Fairies, more costly than if they had been manufactured in pure gold.

One manufacturer of less costly china has arranged a stall like a small room, with stove chimney ornaments—a well executed statue in parian of Pelissier, one of the great improvers of porcelain manufacture in France, of whom it is recorded, that, wanting fuel to complete his experiments, he burned up first all the trees of his garden, and then all his furniture. This parian statue is three feet high, of very good colour, and came out of the oven well proportioned.

While we can advantageously study the finest kinds of French porcelain, in the ware needed for every-day use at breakfast and dinner, we have a great superiority over them in quality and in price.

French cups are thick, heavy, and brittle. French plates will not stand fire. The luxury of a hot plate is denied, by an absurd tariff, to a country where cooking has been raised to the rank of a science.

We cannot praise a number of hideous green porcelain snakes and lizards in the Jewellery Room.

On leaving metals and porcelain, we may turn down avenues where glass cases on both sides form a sort of little street of shops full of costly shawls. It is extraordinary, that, with the power of designing and executing work of such excellence, the French shawl manufacturers are constantly agitating for additional prohibitive or even excluding duties on all European and Indian shawls. It is not many years since it was gravely proposed by the French manufacturers, that every lady possessing an Indian shawl should be compelled to wear a Custom-house metal plate on it, to show that the duty had been duly paid.

Beside several of the cases hang the original designs in water-colours, even more beautiful than themselves. In the same manner we can successively pass robes, flounced and unflounced, in silk, in satin, in lace, in muslin, arranged in the most attractive manner. Facing the grand avenue are the choicest productions of the looms of Lyons, in curtains, and brocaded silks for furniture.

Except so far as an additional charm is gained by the arrangement, the articles which may be classed under the general term of "soft goods" will excite less attention than any other part of the French collection, because we have been accustomed to see all these things sold in our shops. London is a larger and better customer of Lyons than Paris. Several of our principal retailers are actually partners in Lyons manufactories.

From this observation we must except the Gobelins tapestry, to which a room has been devoted. The Gobelins tapestry, like the Sèvres china manufactory, is carried on without regard to profit, at the expense of the Government. By the hands of embroiderers, especially educated for the purpose, and selected for their talent, the works of great ancient and modern painters are copied. At one period, Gobelins tapestry was never sold, but reserved as presents by the French sovereigns to favourites and foreign potentates. At present, it is sold under certain conditions. A set of tapestry, from designs by Paul Delaroche, were lately in course of execution for the Duchess of Sutherland. The cheapest piece of tapestry exhibited is valued at a thousand pounds—a larger piece at three thousand pounds.

There are also specimens of the Aubusson carpets.

In carpets, as in porcelain, our strength lies in the quality and price at which we can afford to supply the middle and working classes. With us a carpet as a necessary piece of furniture for a respectable mechanic. In France, except where English abound, it is considered a luxury of the first order. We can remember, that, when travelling through France twenty years ago, a piece of carpet, carried for the use of an invalid, was examined by servants at inns in the south with as much curiosity as a piece of Indian embroidery would be here.

In artificial flowers, the greatest display is made by the celebrated "Constantin," in a case of rare tropical plants, facing the Avenue. The other artificial flowers are arranged in the galleries.

The northern bays of the French division are devoted to fire-arms in great numbers, and profusely ornamented; to surgical instruments, anatomical models, to philosophical instruments, and costly scientific clocks, which deserve separate notice and illustrations; and to machinery, which is not yet sufficiently arranged to enable us to do it justice. We are disappointed at not seeing more Parisian furniture. We think that a room completely furnished up as some Parisian *boudoirs* are, would have rivalled the Austrian suite in attraction, and proved a profitable speculation to the proprietor.

Of course, we do not pretend to have noticed one twentieth part of the French collection, but we have just said enough to indicate the different sources of interest open to the examination of different tastes. From time to time we shall more minutely describe and illustrate separate bits of special beauty and picturesqueness.

THE FOREIGN MINERALS AND METALS.

The collections of raw material belonging to the mineral kingdom from foreign countries are by no means so considerable as those forwarded from the British Islands, but they are not deficient in interest, though, on the whole, less prominent objects. From our own colonies some of the best and finest specimens have been obtained, and we will endeavour to give in the present article a tolerably complete account of those already placed out for examination.

Commencing on the east or transept side of the Fine Arts Court, we find first the productions of those well-known and remarkable mines of South Australia, which have yielded, within a few years, enormous supplies of the richest and most valuable ore of copper. The superb specimens of *malachite*, obtained from this colony, have already come into use for the purpose of inlaying, to such an extent as to affect very seriously the Russian market for this valuable stone; and examples of this kind may be seen in Mr. Vallance's table, in class 27, where, as indeed in the other articles of the same kind by the Derbyshire marble workers, the Australian malachite is used indifferently with the Russian, and is equal in quality, though, perhaps, not capable of being cut into slabs of such large dimensions. The blue carbonate of copper (azurite) is also occasionally found with the green, and forms a beautiful variety in tables and other ornamental inlaid work.

The Burra Burra mines, the most remarkable of those hitherto opened in South Australia, are situated near the rising town of Adelaide, amongst hills of from 2000 to 2500 feet high, running north and south. They have already yielded nearly 60,000 tons of copper in about five years of working, and the mines now employ upwards of 1000 persons. The result has been enormously profitable to the first adventurers; and the nature of the workings as well as the produce may be well understood by the diagrams and collections in the part of the Exhibition to which we are now referring. Other large and important companies have also taken advantage of the mineral wealth of the colony of South Australia, among which the South Australian Mining Company is, we believe, the largest landholder. The collections exhibited by and on account of this company will be found to possess great interest. In addition to copper, the district contains also vast mineral resources, as the ores of iron are abundant and very rich; and good indications of lead, and even of the precious metals, have also been found. We would direct especial attention to the magnetic and micaceous iron ore, as promising great advantage in working.

Various parts of New South Wales and Van Diemen's Land yield stone of great beauty and of much value for ornamental purposes. The Opals are especially worthy of notice, and the white topazes may also be referred to. A magnificent specimen of opalized wood is exhibited in the nave on the east side of the Colonial trophy. In addition to other articles, may be noticed some promising hone-stones from Van Diemen's Land.

From New Zealand, whose products are placed near those of Australia, in the Colonial Court, we have samples of titaniferous iron ore, said to exist in vast quantities as sand; other ores of iron, of various kinds; considerable specimens of coal and lignite; some samples of sulphur, and specimens of pumice. Of these indications of mineral wealth, perhaps the most interesting at present is the coal. The quality, judging from appearance, is not such as to enter into competition with that obtained from England; but this may be partly owing to the fact, that, hitherto, it is only the top of the bed, where it has been long exposed to the weather, that is sent for examination. Still the quality is rather that of lignite than true coal; it is light, hardly soils the fingers, and in some parts resembles jet. With these products from the Southern Archipelago, we may rank, also, the gritstones forwarded from Norfolk Island.

The island of Trinidad has furnished a series of very great interest, obtained from the remarkable lake of pitch existing in the island; and the collection includes, also, a number of products, such as charcoal, naphtha, &c., derived from the same mineral. The pitch lake is about a mile and a half in circumference. The pitch at the sides of the lake is perfectly hard and cold; but, as one walks towards the middle, with the shoes off, in order to wade through the water, the heat gradually increases, the pitch becomes softer and softer, until at last it is seen boiling up in a liquid state. The air is then strongly impregnated with bitumen and ulphur, and the impression of the feet is left upon the surface of the pitch. During the rainy season it is possible to walk over nearly the whole lake, but in the hot season a great part is not to be approached. The pitch has been employed to repair the roads in the colony. In addition to the pitch and its products, some good ochres have also been sent from Trinidad.

The island of Bourbon (Mauritius) sends coal, to tempt our steamers to trust for supply to the countries by which they pass. St. Helena sends rock salt; and other small dependencies, in different parts of the world, have furnished, in like manner, their quota to the collection of mineral substances, illustrating, in the most practical and useful way, the real resources they possess.

We next come to Canada, and the British possessions of North America. In the same Colonial Court as that in which we see the productions already referred to, will be found specimens of asphalte, from New Brunswick, and a quantity of plumbago, or black-lead, from St. John's, in the same colony. The latter is not of such a quality as to possess value for the higher purposes for which the material is required, but is quite sufficient for machinery and for household use. It is flaky and of good colour, but wants compactness, Not far from these specimens will be found some interesting minerals from Nova Scotia, including a series of iron ores of the very finest quality; some ores of manganese, sulphate of barytes, ochres—both red and yellow, and various building materials. These are supplied by Mr. Archibald, a gentleman whose large interest in the colony justifies the prominent position he holds among the contributors. In addition to these objects, some coal is sent from Sydney (Cape Breton), a district estimated to contain 250 square miles of workable coal of excellent quality, already much used for domestic purposes, and worked from pits 250 feet deep. This coal is highly bituminous, igniting readily, and leaving but little ash. There are fourteen seams upwards of a yard thick, one of them being eleven and another nine feet.

From Canada itself the minerals are numerous, and of the highest interest. They include geological specimens in series, illustrating the structure of particular districts; numerous and most valuable ores of iron, of excellent quality, including the magnetic oxide. Copper ore, also of excellent quality, together with native copper and native silver, and various other metals, including gold, some of which have been worked profitably. In addition to the metals may also be observed several interesting specimens of limestone and sandstone, for purposes of construction and ornament, and some slates not of very excellent quality. There are also several other specimens, of remarkable beauty and magnitude, consisting of crystalline phosphate of lime (apatite), capable, it would seem, from their abundance, of being rendered available for agricultural purposes when the large supply of the phosphate present in the virgin soils of the country shall be exhausted by frequent crops of food plants. Several interesting specimens of lithographic stone should also be mentioned, as affording means of obtaining, at a moderate price, so important an adjunct to the intellectual advance of a country.

The last of our Colonies whose mineral productions we shall refer to is the East Indies—that rich and gigantic territory which alone might rival in its vast population and numerous productions any other country in the world. From their various dependencies in the East, the Directors of the East India Company have succeeded in obtaining and have forwarded specimens of almost every object of nature or art that could render their collection useful and instructive; and although at present these riches are not altogether laid open for investigation, there is still enough to justify careful study. We have already, in a former article on the gems, alluded to the more remarkable precious stones from India, but there are also many other minerals, hardly less valuable if we regard the true source of riches to a country.

Thus, the iron ore, from which is made the celebrated Wootz steel, with many manufactured specimens; the corundrum, not only in its pure and transparent state as ruby and sapphire, but in its rougher form, as the material from which all the best kinds of emery are obtained; mica, used for various purposes: these and many other minerals will be found; but it may, perhaps, be advisable to refer again to them when the arrangement of the collection is more perfect.

We may, however, here direct attention to the series of slabs of various kinds of East Indian marbles, and also to an interesting specimen of Indian inlaid-work, exhibited by Mr. Stewart, in class 27.

Besides the objects from the East, exhibited by the East India Company, there are also some of considerable interest from China. Of these we may especially refer to the series of materials used in the manufacture of porcelain, contributed through the Board of Trade, and forwarded by H. M. Consul, Shanghae. These include not only the china-clay, or kaolin, but also the china-stone, and the different earths and pigments used for various purposes, whether mixing, glazing, or colouring, in the great porcelain works of the East. No less than 70 packets are exhibited, containing samples of colours and colouring material employed in producing the various tints.

Next to China are exhibited the products of various countries of South America. Of these, Chili has sent a lump of gold ore weighing 3 cwt., and a mass of native silver—one of the largest hitherto seen in this country, the value of which amounts to £500 sterling. The condition of this mass of native silver is peculiar and interesting, the whole consisting of numerous plates or layers, not apparently connected with each other, except by simple contact. It appears to have been part of a large mass. The rich copper ores from Chili are also well worthy of notice.

Of the various Continental countries, Switzerland, which is first passed in journeying eastward through the Building, has contributed but little to the collection of mineral substances. Spain and Portugal, especially the former, are far richer, and include many series of great interest. Ores of all the principal metals will here be found: specimens of building material, marbles of great beauty, china-clay, salt, sulphur, phosphorite (of Estremadura), mineral asphalte, glauberite, gypsum, alum, and many others, are exhibited. Amongst these, the ores of mercury, those of iron and copper, and the samples of native silver and gold, will be found of interest, and, with the others, will serve well to illustrate the great natural riches of the Peninsula, and the utter inadequacy of any products, however important, in rendering a country rich and prosperous, if the habits and feelings of the people, or political disadvantages, are in action to cause the neglect of that first of all essentials to prosperity—free communication at small cost from one part of a country to another, and cheap means of conveyance to a port. The produce of Spain is in this respect especially remarkable, as at present these sources of unbounded wealth are completely and hopelessly locked up. Amongst the various earthy minerals from the Peninsula, we would refer more particularly to the coal from the province of Leon, and the collection of 87 different marbles from the Royal Library at Madrid. The marbles (chiefly slabs) from Portugal, and lithographic stones from the same country, should also be examined; and while speaking of these materials, we would refer to a most exquisite slab exhibited among the British goods, in class 1, by Mr. Monteiro (No. 150), presenting a rare instance of stalactitic carbonate of lime, almost transparent, and coloured with a soft tint of greenish blue. This slab is from Granada (incorrectly marked "Canada," in the first edition of the Catalogue).

Persia, Arabia, and Greece, with Turkey and Egypt, all present their stores within a short distance of the objects we have been just describing. These, with the exception of Greece, appear at first to exhibit few or no mineral products; but we shall often find, classed among British goods, various series properly belonging to foreign countries. Thus, we may here refer to an extremely beautiful and most valuable set of turquoises, some in the matrix, and others cut, and formed into ornaments, exhibited by Major Macdonald, in class 1. They are from Arabia, and should be examined carefully, as being a collection not rivalled in any museum in Europe.

The minerals from Greece are very interesting, as they include samples from various quarries which have in former times supplied the finest marbles of antiquity. There will be found amongst these both white and coloured varieties, and some objects sculptured from them. Greece also supplies some of the finest emery used in manufactures (from the isle of Naxos); the celebrated meerschaum, so valuable in the manufacture of pipes; puzzuolana of excellent quality; carbonate of magnesia, used both for magnesia and Epsom salts, and also for making bricks; and several valuable millstones. The best hone-stones are obtained from Greece and Turkey; but these are exhibited in the large collection shown by Mr. Meinig, in class 1, British Goods.

Italy comes next in order of position. Like Greece, it exhibits some beautiful marbles and objects sculptured from them; and we find also many exquisite specimens of that remarkable mosaic or inlaid stone-work for which both Rome and Florence have long been famous. The specimens exhibited are of various kinds, but almost all of great excellence. Some of them might easily be mistaken for pictures, and would do no discredit to the artist, while in others we have imitations of mosaic marble manufactured of a peculiar clay found near Rome.

The mineral products of France are hardly yet in a state to justify our giving any detailed account of them, or mention which are most deserving of interest. The Catalogue is at present in a hopeless state; and we must await the completion of the arrangements in the Building, and some means of discovering objects described in the Catalogue, before we can venture to do more than state that there are collections of this kind (mineral products) which will amply repay investigation. We may, however, mention as of great interest a fine series of excellent millstones.

The collection of goods from Algiers exhibited by France contains good iron ore from that country, and several other minerals of interest.

Belgium succeeds France, and presents, as might have been expected, a large and most interesting series of minerals. First in importance are iron and coal, both of which are fairly represented. The former is chiefly shown in a manufactured state, and the iron of Liege and other parts of Belgium is too well known to require that attention should be especially called to it. The lead and zinc, but especially the latter, are also well exemplified; and we might have mentioned in speaking of France the excellent and remarkable products of the Vieille Montagne Company, the seat of whose operations is to a certain extent in Paris, though Liege is the more usual reference. A very large part of the zinc of commerce is obtained from Belgium, not indeed from the rarity of the ores in other countries, but owing to the fact that the better and more useful ore being there so infinitely abundant and easily worked, the ores of other countries are frequently neglected as not worth making use of.

The coal of Belgium is of different kinds, and is very much used both for manufacturing and other purposes in the country and for exportation, chiefly to France. The samples of it sent to London are therefore particularly interesting. They are chiefly bituminous and rather tender. One kind (the Flence coal) is unlike any found in the British islands.

In addition to its coal and iron, Belgium is also remarkable for the large quantity and excellence of the marbles obtainable from various quarries in different parts of the country. There are several examples of these, though none, perhaps, that are especially remarkable for excellence of quality. Cheapness of production is, however, attained to a very great degree. Besides these, there are several varieties of mill-stones, some of admirable quality and considerable size. The whetstones and hone-stones are also of importance; and the China and pottery, brick and fire-clays, are worthy of notice. Several interesting specimens of road material may be mentioned, also from Belgium.

Austria has exerted herself greatly, in all respects, to send such objects as might best illustrate the nature and extent of her natural resources. These include coal (chiefly from Bohemia and Silesia), and lignite, or brown coal (from Styria), both now worked to great extent, and of extreme importance to the advance of the country. A large proportion both of the coal and lignite is used in the production of iron, of which metal the ores as found in various parts of Austria are practically inexhaustible, and the quality excellent. In Styria, especially, there are enormous masses of the ore called spathic iron (a crystalline carbonate, much used in preparing a peculiar kind of steel manufactured into scythes and other agricultural implements). The Austrian scythe and sickle reach not only across Europe and into Asia, but are even imported into America; and it is calculated that not less than seven millions of these implements are produced annually, chiefly from Styria and the Tyrol, and almost entirely of this particular ore of iron, which is well represented by numerous specimens, and is the more worthy of notice as it is comparately rare in England, and is quite free from many of those impurities that impair the usefulness of some of our ores.

Next to the coal and iron may be mentioned, as one of the most important products of Austria, the various kinds of clay used for the manufacture of bricks. A picture, showing the process adopted at Vienna, in one of the largest establishments of the kind known, will be interesting and useful as illustrating this subject. The sands used in Bohemia for the manufacture of glass; garnets, also Bohemian, of which vast numbers are used for various ornamental purposes; salt, obtained in enormous quantities from the great mines of Wieliczka, in Poland; various metallic substances, and ores used more or less directly in obtaining colour for the artist and the porcelain manufacturer; a number of building and paving stones; a considerable variety of imitative marbles, stones, and artificial pumice-stone, used in grinding and polishing, may be pointed out as adding to the interest and value of the Austrian series, and show how carefully the selection has been made. Lastly, in mentioning the Austrian minerals, we must refer to the produce of the remarkable and well-known quick-

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silver mines of Idria. These, with some ores of copper and tin, are sent by the Director of the Imperial mines, Vienna.

Passing beyond the frontier of Austria, we come next, following the geography of the Exhibition, to the products of WURTEMBERG, and discover some grindstones from the neighbourhood of Stuttgard, and some specimens of limestone for hydraulic cements, which are good and interesting: these, and some samples of polishing powder, offer the chief interest amongst the minerals, and they are succeeded by lava millstones from Rhenish Prussia, and some marbles of much beauty from near Coblentz. Specimens of lignite, from the same district, but of the nature of paper coal, and better adapted for alum than fuel, next occur; and these are succeeded by the ores and other mineral wealth of the Duchy of Nassau, where large works exist for the manufacture of iron, ores of which metal abound in the immediate neighbourhood. Copper, cobalt, nickel, manganese, and other metals are also here represented; while slates from Dillenburg, marbles from Diez, mercury and cinnabar from Ludwig, near Wetzlar (only recently discovered), and vast supplies of lignite, at least as good as that of Austria, attest the great mineral riches of that small district on the right bank of the Rhine, which has hitherto attracted the notice of the geologist rather than the capitalist, but which must before long take rank as rivalling in real importance some of those that have been long worked in Germany, and elsewhere on the Continent.

RUSSIA supplies several minerals of great interest, though not, perhaps, very attractive to the general visitor. Among them may be enumerated, as especially worthy of notice, some large masses of malachite (green carbonate of copper), one of which is of unusual size, beauty, and value; some specimens of native copper and red oxide of copper, of great beauty; and also some anthracite coal from Odessa. There are also some ores containing cadmium in considerable quantities, and which are important in the present increasing use of this metal, both directly as an improved material for coating iron, and indirectly as the base of some valuable pigments, &c. In addition to these, are some ochres and specimens of clay, with fire-bricks manufactured of them. Ores of iron and manufactured iron are exhibited, which possess good interest.

From SCANDINAVIA, the collectors of mineral substances are not large, but the silver ores are peculiarly interesting. The iron ores, especially from Dannemora—so celebrated for the steel made from them; the cobalts, in various stages of preparation; the lead ores; and manufactured iron of various kinds, nearly complete the series. There are also specimens of chromic iron.

Last in the series, and occupying the extreme east end of the Building, are the productions of the UNITED STATES of North America—at present rather scanty in every department, and not especially remarkable for the series of unmanufactured minerals. Placed in the nave, where it occupies a prominent position, there may be seen a very fine specimen of zinc ore—one of a large series of zinc and iron ores from New Jersey. Together with the zinc ore are certain preparations of zinc intended to replace those at present derived from white lead, and far less injurious to health. Iron ores of great beauty and extremely rich, consisting of blocks of the carbonate from Connecticut and oxides from New Jersey, are placed for examination, and both native copper and copper-ore are also to be found of large size and some value. We may also direct attention to some fine beryls; some remarkably fine specimens of mica, talc, and steatite; some pure felspar, which has been occasionally imported into this country as china-stone; some fine blocks of anthracite; and, lastly, a large quantity of plumbago of sound quality, well adapted for various purposes, and the use of which is illustrated by a number of casting-pots or crucibles manufactured from it. Perhaps the most remarkable specimen from North America is a block of Californian gold (in the south central gallery), weighing upwards of 18 lb.

Such is a brief and very general account of the foreign minerals as at present to be seen in the Exhibition. It cannot be necessary to repeat that they include many of extreme interest and importance; and if it should be thought that a mere enumeration, such as we have given, is but a bald and tame account of so brilliant a series, it must be remembered, on the other hand, that the objects themselves are attractive in a relative rather than a positive sense, and rather as materials for the intellect and talents of man to work upon and render decorative, than as themselves adapted to please or astonish. To the student and the practical man these materials recommend themselves sufficiently, and will be examined with sufficient care; but we hope to induce some others to avail themselves of so unusual a source of information by thus laying before them a brief outline of this part of the great Exhibition.

A WALK IN THE WEST GALLERY.

AFTER hours spent in the blaze and bustle of the main avenues, it is a relief to turn into one of the galleries which the curious crowd have not yet discovered—galleries in which the oddest things have been thrust almost out of sight. The galleries looking down on the nave, or some of the variegated courts, attract a fair share of attention, considering that there are no seats whereon the weary can rest, and no flower-beds of bright-coloured bonnets to invite the *flâneurs*.

Ascending the first stairs from the transept of the North-west Gallery, we find ourselves in the midst of the Potteries; Copeland and Minton, and Wedgwood, and Staffordshire, Worcestershire, and Derbyshire, are around us. Overhead the Berlin wool worked carpet (executed by fifty loyal ladies, for the Queen), with the best productions of Kidderminster, give effect to the splendid chandeliers as they hang side by side.

We will begin with the silent back avenue which overlooks the canvass covered roof of the machine-room.

A Sussex-man has found place for a set of baskets made of staves in a sort of boat shape, of all sizes, from a clothes-basket to a reticule, which he recommends for many purposes, among others for "toys" or "*coal-scuttles*."

A little further on we come upon bonnets manufactured from rye straw in the Orkney Islands, a very pretty plait and texture. They are the result of instruction given by a philanthropic family, who were anxious to provide a new employment for the winter evenings of our northernmost countrywomen. The specimens exhibited will bear comparison with those sent from places famous for Leghorn plait. We hope this attempt may prove a permanent and profitable amusement to the Minnas and Brendas round Stromness and Kirkwall.

Next we pause before a bedstead, which must really be invaluable to heavy sleepers, if the exhibitor can only perform his printed promise. He undertakes, that, at any hour fixed on a watch provided, a part of the bedstead rising up, shall cast the slumberer clean out, in fact, empty him into the middle of the floor. This may be called "a real blessing to Boots." But the inventor should go a little further, and combine with this turnover bedstead the contrivance of a Manchester mechanic, reported in a round of country papers twelve months ago, by which, at a given hour, not only did the bed-clothes rise up to the ceiling, but a lamp was lighted, and a kettle of water boiled, with a couple of eggs, in the course of ten minutes.

A little further on, emigrants are enabled to inspect a cottage of patent felt; another with a double wall of corrugated iron; and a portable tent, in the form of a huge umbrella. The patent felt, if it be waterproof and fire-proof, is a valuable article. The iron cottages are much too cumbrous and costly for any colonist, unless it be a Canterbury colonist; for where there are no houses, there are no roads, few draught cattle, and no cheap porterage; so that, between the expense of landing from the ship, and through the mud, sand, or over the hills of a new country, a large capital is consumed before the unfortunate owner is housed, and he vainly wishes he had been content with a piece of tarpaulin hung over the bough of a tree, like his less genteel neighbour.

The umbrella tent is really ingenious; it would probably require to be carefully pegged down to stand a high wind; but still it is a contrivance that may be very useful, especially if it could be manufactured at a cheap rate.

We wish the French would exhibit the little portable tents which each soldier carried on his back, and set up when bivouacking, in the early days of the Roman expedition. They might be very useful to both sportsmen and emigrants.

The Board of Northern Lights claim our thanks for a model of all the machinery employed, and of the progress of building a light-house on the Bell Rock, with a representation of the wooden island, or cage, in which the workmen lived during the progress of an undertaking as extraordinary as the erection of Eddystone. They have also sent specimens of the lamps, prisms, and reflectors they use.

In the same line of march we come upon a small tank, containing model of Mr. Robert Napier's steamboat for floating a railway train across a river too broad to be bridged; and then there is a case of models of yachts exhibited by the Thames Yacht Club.

A Mr. Greener, of Birmingham, makes a very formidable display of guns, the more prominent being devoted to commercial and philanthropic purposes; one being intended to fire a rocket with a line from a life-boat to a ship in distress, and the other to discharge a barbed harpoon into the body of one of those sperm whales which yield the oil so indispensable to the lubrication of our finest machinery. A tremendous punt gun may also be considered more a matter of trade than sport, as it is of the kind used to supply our winter markets with all manner of wild fowl.

We cannot help noting, that, while every other country puts its death-dealing weapons in the most conspicuous position of their space, we seem to hide them away as much as possible. The chief collection is to be found at the extremity of the southernmost western gallery.

Retracing our steps by the gallery overlooking the nave, we find ourselves in a crowd of curious people which had not ventured into the back ways. Maps, globes, and other geographical helps are drawn up in rank and file. About them come philosophical instruments, dissolving views, Daguerréotype, Talbotype, and calotype apparatus, with specimens from Kilburn, Beard, and others; a pair of magnets, with power to support a ton; an electric telegraph, in which magnets are used, instead of galvanic batteries.

Leaving philosophy we reach sport, in the shape of a grand battery of music, which is discharged at appointed intervals from grand, semi-grand, cabinet, piccolo, and all manner of newly-named instruments, by Broadwood, Erard, Collard, and others, perhaps equal in merit, but not so well known, whose respective qualities are duly discussed in another article by a competent professor. From pianos a step takes us to the translucent manufactures of Osler and Apsley Pellatt—chandeliers, cups, vases, and decanters, of diamond-like brightness and clearness.

And here, for the present, we rest, only observing, for the benefit of the persevering, that, in the opposite gallery, in the case of Messrs. Garrard, the silversmiths, a lump of Californian water-worn gold is to be seen which is enough to realise one's dreams of El Dorado. It is as large as the top of an ordinary tumbler, about an inch and a half thick, worn and rounded like a blue stone of the same size that may be often picked up in a trout stream, or any rushing torrent where the stones are constantly in motion.

In the same department, Mr. Collis, of Birmingham, exhibits a set of models in glass of the exact size and shape of the most celebrated diamonds. From these models, it seems that the Koh-i-noor is exceeded in size by many other diamonds.

MUSICAL INSTRUMENTS IN THE GREAT EXHIBITION.

FIRST ARTICLE.—PIANOFORTES.

AMONG the objects of interest and curiosity which form the contents of the Crystal Palace, a prominent place is held by Musical Instruments. Of these the pianoforte is the most important, whether we consider its capabilities (being almost an orchestra in itself), its adaptation to all purposes of musical representation, its universal use in every family as an indispensable requisite for amusement and instruction, or its consequence as a branch of manufacture, employing a large amount of capital and skilled labour. Fifty or sixty years back there were scarcely a dozen pianoforte-makers in England; there are at present between 200 and 300 in London alone, while there are makers in most of the capital towns in the United Kingdom. It is calculated that there are not less than 1500 pianofortes made every week in Great Britain and Ireland, employing, when trade is good, full 15,000 workmen of a superior class, and receiving wages accordingly. From these facts the great magnitude and importance of pianoforte-making as a department of our national industry are at once apparent.

It is curious to contemplate the transition from the old harpsichord, with its tinkling lute-like tones, to the power and richness of the present grand pianoforte. To do this, we must refer to some of the old firms of eminence, such as Broadwood's, Kirkman's, &c., who were originally harpsichord makers. The harpsichord was the original model for the grand piano; the shape, the scale, the strings, sounding-board, and keys were the same; the principal alteration was in the mechanism—in the adoption of percussion as a mode of putting the string in vibration, in preference to pulling it by means of a little piece of crow's quill inserted in a piece of wood, moved by the key. This alteration made, the progress of the instrument was very rapid. There is scarcely an eminent firm in the trade who have not contributed to its improvement. It is not, however, to any one house, but to the exertions of a number of individuals, each acting upon, and taking advantage of the labours of the other, that the present perfection of the instrument is due.

In this department the leading houses take the first rank, while the display by makers of less eminence is exceedingly creditable. The manufacturers seem as desirous of pleasing the eye as delighting the ear, and, accordingly, we notice some very beautiful instruments, in which the art of the carver, inlayer, and gilder is lavishly employed; but we miss any attempt to give a more elegant and uniform shape to the grand pianoforte, which is so much to be desired. Messrs. Broadwood exhibit four grand pianofortes (one in a magnificent case designed by Barry), in which the beauty of the wood and the excellence of the workmanship is conspicuous.

The house of Erard sends several splendid harps and a number of pianofortes, among which we perceive a revival of the old method of attaching pedals to an instrument. This calls to our mind having seen, long ago, an instrument with an octave and a half of pedals, by Kirkman, belonging to the celebrated Bartleman, and which he considered a great curiosity. Messrs. Collard, among other instruments, send specimens of their square and cabinet pianos, for which they are so famous. But the greatest attraction in this department appears to be the miniature model grand of Messrs. Kirkman. The art and science of pianoforte-making seems to be concentrated in this little instrument; and were it not there to speak for itself, no one would believe it possible to produce such clear, full, and sparkling tones in so small a compass, while no difficulty seems to be avoided, having 6¾ octaves and all the modern improvements. We have had our attention directed to the new repetition mechanism introduced into the concert grand pianoforte exhibited by the same firm, which, while it is as effective as that patented by the late Mr. Erard, is of a totally different construction; and the tendency of those actions to get deranged and to become noisy is here removed, and with a perfect repetition the touch is as smooth and light as can be desired. Another improvement, also by Messrs. Kirkman, is the addition of metal bracings to their oblique pianofortes, and the introduction of drilled metal studs and the harmonic bar for the improvement of the upper notes, so often defective in this class of instruments.

In regard to the foreign pianofortes, we may safely say, without any undue assumption of national superiority, that they by no means rival the productions of English skill and industry. The Paris pianofortes, next to our own, are the best; and the best of them are those of Erard, also an English manufacturer. Good instruments, too, are made at Vienna, and largely supply the demand of Germany; but even in France and Germany, the pianofortes of the great English makers have not lost the pre-eminence they have so long enjoyed. The American instruments are merely copies of our own. The only original construction among those exhibited is a double pianoforte (in other words, two pianofortes), each with its own set of strings and key-board (the sounding-board being common to both), so placed that two performers can play together sitting opposite to each other, or four if two are at each key-board. There is some ingenuity in this, but its ability in a musical point of view is very limited.

In another article we shall make a few observations on the other species of instruments, especially organs, of which there are a considerable number.

THE PRODUCTIONS OF ABORIGINES IN THE EXHIBITION.

THE first, and perhaps the most powerful and lasting impression received by an attentive visitor at the Exhibition, when looking through its vast collection of articles from every region on earth, is this—that all men, differ as they may in other important points, more especially the uncivilised from the civilised, nevertheless obey at least one law in common: they all, without exception, but in very different degrees of intensity, *labour*. The judgment, that man shall live by the sweat of his brow, is here exemplified to the full, although a consolatory experience also proves that the curse may largely bring out its own relief. Industry, therefore, and its higher powers of science and art, have been wisely adopted by the founder of the World's Exhibition now holding in England, for the pivot of the greatest interest of this Exhibition, and a very important, however far from being the sole means of social improvement.

The most careless glance, however, at the multitudinous display of the material results of all men's industry, establishes some striking distinction in quality among them, even whilst unity in the one respect of effort is recognised; and it cannot but be useful to examine the several masses of products in detail, in order to search out the causes of the obvious difference in their respective values.

The articles indicated in the title of this paper, for example—the productions of those who are commonly called Aborigines, or the less civilised races—are substantially the inferior fruits of human industry. Yet good reasons will lead us to devote careful and special attention to these Aboriginal products. They illustrate the primitive elements out of which the most advanced nations have elaborated the gorgeous and graceful, the eminently useful, and almost intellectual things, of which this noble assemblage mainly consists. The most polished nations may in them trace their own perfection backwards to its source.

Then, these Aboriginal productions suggest, in their rude aptitude of purpose, sometimes in their skilfulness, irresistible arguments to the more refined, to look with greater indulgence upon their struggling fellows, by whom such interesting productions are made. In this point of view, one of the most beautiful subjects in the Exhibition, Mr. Thomas's "Spirit of Science unveiling Ignorance and Prejudice," may have an unexpected application. The highly civilised man, rendered by science familiar with the works of uncivilised people, will subdue his own prejudices in regard to their incapacity, and soon come practically to aid them to acquire the superior qualifications that shall rightfully place them on his level.

The Aborigines in the Exhibition are not distinguished in the general plan, as workmen of a separate class. All contributions having been invited from separate nations (not from separate denominations of men in each nation), all the producers of those contributions are confounded together. So, again, in a great mass of instances, no line can be drawn clearly between the productions of civilised and those of uncivilised workmen. There is, however, a general understanding as to what fairly belongs to the people called Aborigines, so that it will not be difficult to mark their share in the contents of the Exhibition.

China and India have so much in common with us, in their manufactures, their arts, and their agriculture, and they have made so much progress already in many respects, that purely *Aboriginal* products are comparatively few in those countries, but both possess some worthy of notice. Ceylon and the Indian Archipelago have sent us more such; and Africa still more, from all its quarters—east, north, west, and south. Turkey, although still too resplendent in "barbaric gold," instead of cultivating the best taste, is fast assuming the great forms of our civilisation; and Russia will bring from its remoter tribes only, anything of a purely Aboriginal character. North America, in its prodigious new wealth of raw products of art and industry, offers some scanty memorials of deep interest from its Aboriginal tribes. Central and South America could have presented most curious combinations of civilised and uncivilised manners as now existing, and have sent us remarkable means of comparing the civilisation that existed before the New World was revealed to Europe, with the improvements introduced by Christians at a frightful cost of human life. Both regions, distracted with civil discord, have contributed a little—very little; but one South American British colony, Guiana, has made a zealous response to the call from home. Nor, probably, will the frozen North, with its princely company of merchants, refuse its most curious Esquimaux contributions. Besides their vast domain from Hudson's Bay to Vancouver's Island, similar exhibitions may come from Greenland and Lapland, as the ice breaks up; whilst New Zealand and the South Sea Islands, new as they are to the civilised world, are already found not absolutely wanting in this glorious race of humanity.

A rapid survey of these poor treasures of the primitive man's ingenuity still in his own hands, will unquestionally tend to allay the melancholy feeling too prevalent among us, that numerous portions of our race are doomed by Providence to perish at the approach of their more instructed brethren. Facts encourage a nobler and a wiser prospect. A capacity for a safer and better condition of life is clearly established by these productions of industry, exercised in every climate, within the burning tropic and at the pole, by Negro and by Esquimaux; in the gloomy American forests, and over the bare steppes of Tartary; by the half amphibious islander of the Pacific, equally as by the Kaffir, to whom an ironbound coast and unnavigable mountain streams refuse the use of the simplest boat—each, however, having his peculiar occupation. All this confirms the oft-repeated judgment, that "art is natural to man, and that the skill he acquires after many ages of practice, is only the improvement of a talent he possessed at the first. Destined to cultivate his own nature, and to mend his situation, man finds a continual subject of attention, of ingenuity, and of labour."—*Ferguson's Civil Society* (6th edit.), 1793, p. 281.

The same satisfactory conclusion is supported by analogous materials in the Exhibition, and more abundant ones than the purely Aboriginal products. There are the contributions obtained for our daily use by the combined labours of civilised and Aboriginal men. They are the raw materials of commerce to an enormous amount in quantity and value; the dyes, the gums, the drugs, the oils, the seeds, the woods, the woven and textile plants, the leaves, the roots, the skins, the furs, the feathers, the shells, which promote so largely the comfort and adornment of social life. The several departments of each civilised nation in turn have received these contributions from the barbarian, and sometimes from the savage—the Aborigines—whom in return civilisation has not yet discovered a better way to manage than by almost incessant wars.

It is a capital point, in considering these raw materials of the arts, to know how to obtain them in a *genuine* condition; and on this point it will be found that our interest as manufacturers, and merchants, and consumers coincides happily with our duty as men. Exactly in proportion as the native collectors of nature's stores are well treated and well instructed in the best ways of civilisation, the more expert are they, and the more disposed to be vigilant and honest in their work.

The survey of Aboriginal products in the Exhibition may be conveniently begun with British Guiana, as the collections from this colony are remarkably complete, and it is a country admirably described by Sir Robert H. Schomburgk, one of the most accomplished of modern travellers. It is a portion of South America on the Atlantic, in latitude 6 degrees north of the equator, and contains 48½ millions of acres of land. The staple produce is sugar, rum, and coffee, with some cotton. Other produce of less value are its plantains, and various esculents, with timber and other articles approved by the experience of the Aborigines.

The chief food of the natives, the cassava bread, is to be seen here, which it is seriously proposed to export to England, as being superior to the potato in nutritious quality, and so much more abundant than any meal known, that a profit of £50 per acre may be gained by its culture. The graters used by the natives in preparing the cassava meal from the root are of the manufacture of particular tribes, famous for this business, as others are especially famous for the manufacture of hammocks—the materials probably in both cases being abundant in their countries, as Manchester owes its ancient celebrity to the streams and coals of its neighbourhood.

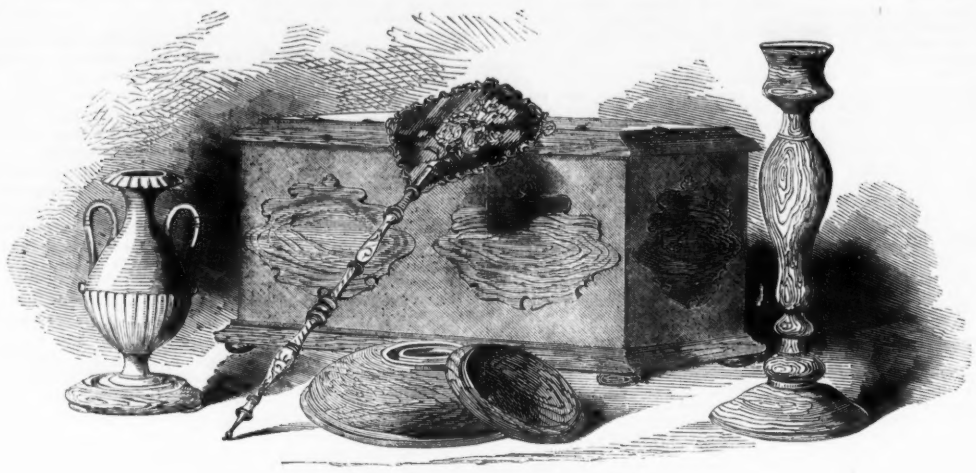
The cassava bread is made in an elastic tube, called the *Matappée*, a very ingenious contrivance of the Indians, says Sir R. Schomburgk, to press the juice from the root, which is one of the most violent poisons before being pressed. After the root is scraped it is pressed in this tube plaited of the stems of the *Calathea*. A pole in the tube is used as a powerful lever, and weighed down by two persons sitting on it. The juice escapes through the plaited work; and the dried meal is baked in a pan in a few minutes. A specimen of the machine, as well as of the bread, is in the Exhibition.

Another new article of food is also exhibited—the plantain meal, which the Indians use; and our settlers calculate it may be made to produce a gross return of £112 per acre! Well may Europeans be surprised,

as Humboldt says they are, upon arriving within the tropics, at seeing the small space of ground that keeps an Indian family.

The juice of the cow-tree, sometimes used as a substitute for *milk*, is perhaps more valuable as one of the numerous materials for India-rubber. The physic nut in common use by the natives is one of the hundred vegetable medicines of the American forests, well worth further study. There is here, also, a species of Jesuits' bark, of far greater importance, considering its dearness almost prohibits its proper application in our hospitals; and this, also, is well known to the Indians.

But the most valuable articles exhibited from Guiana are the woods originally made known to us by native experience. For ship-building, they are certainly superior to oak and teak; and the bright colours of the specimens strongly recommend them for furniture. In regard to ship-building, it is a curious fact, attested by Sir R. Schomburgk, that one tribe in particular, the Warraus, have been famous builders of canoes and corrials, the durability and speed of which far surpassed any boats from Europe. They made a class of launches, carrying from 50 to 70 men, celebrated in the late revolutionary wars. The timber they selected, the mora tree, is now acknowledged to be the very best for the purpose. Specimens of it are in the Exhibition.



2. ARTICLES OF COTTON-MACHE. BY J. HART.

A more primitive canoe is there, also, made of the bark of a tree, quickly constructed, of extremely light draught, and portable. Its convenient use in this last respect carries us back to the days of our most primitive forefathers, when the wicker and skin boat, to be still seen on the Wye and in Ireland, was easily borne on the shoulders of the adventurous waterman when obstacles impeded his navigation, or he wished to surprise a neighbour at a distant stream.

In this collection, too, may be seen the original *hammock*, which we have so extensively adopted at sea, and which in France is wisely used in crowded rooms, from which it can be removed by day to purify the air of sleeping-rooms or schools. It is interesting to know that the Indians make their hammocks of extraordinarily strong textile materials, new to us, and of excellent cotton. Nor is it less interesting to learn that the sugar of Guiana, of which many specimens are exhibited, has furnished the native people with one comfort from us which they appreciate. They now grow sugar for domestic use; and the cane they cultivate is universally of the kind introduced by us from the French. Cook found it in the South Seas. Bougainville carried it to Mauritius; and thence, by way of the French West India Islands, it has spread, within about seventy years, over the civilised and aboriginal Western World.

These Aborigines, then, can adopt our improvements. They possess, also, the elements of the potter's art, which usually denotes a decided advance from savage life. The mere savage is content with what nature has provided to put liquids in—a sea-shell, a gourd, a part of an egg. The Indian of Guiana manufactures his buck-pots of clay; and a specimen of them may be seen here. In a new edition of Marryat's beautiful "History of Porcelain," the catalogue of such utensils, from those of Egypt to those of Peru, should be enriched from well-authenticated examples such as these among Aborigines.

In some instances the Aborigines are here proved to have completely adopted our usages. From Nova Scotia samples of wheat grown by Indians are sent of the same respectable weight (64 lb. 11 oz. to the bushel) with the weight of the farmers' wheat. The Sioux saddle and hunter's belt, wrought by an Indian maiden, sent by a citizen of the United States, is entitled to be accounted a work of "honest housewifery," quite as much as the carpet wrought for our gracious Queen by the 300 English women. So the New Zealand chief, Tao Nui, who sends his contributions through his London agent, Mr. Gillman, surely has ceased to be an uncivilised man. These contributions are, however, thoroughly

3. STAINED WINDOW, BY GIBSON, OF NEWCASTLE-UPON-TYNE.

5. ORNAMENTAL FURNITURE (LEISTLER), AND EAU DE COLOGNE FOUNTAIN.

4. STAINED WINDOW. BY GIBSON, OF NEWCASTLE.

PORTION OF WINDOW NO. 3.

PORTION OF WINDOW NO. 3.

Aboriginal "specimens of New Zealand woods, gums, and bark, flax and flax manufactures." The same conclusions may be drawn in favour of the capacity of the North American Indian to adopt our usages, from the model of the house of the once wild Carib, the cannibal of Columbus, with every household convenience most minutely represented. The easy chair, the wax tapers, the neat table, the tinder-box, the old man's modern bed, as well as the aboriginal hammock, various musical instruments, various cooking utensils, the sugar-press, cassava-pot, the grind-stone, the neat mat, even the grog-can and a hundred other articles are there, to show the profusion of comforts which civilisation produces. And yet this is the race, thus making progress under a little protection, to which we often refuse common justice, and then we wonder that they flee to the bush. This little Indian picture of civilised barbarism is a lesson that should be perpetuated by such a simple work being, by and by, deposited in the British Museum, if the Exhibition must be broken up.

The models of Guiana native dwellings, also, are very interesting, as furnishing, in the abundance of their domestic comforts, some guarantee for their permanence in one place, so that they have clearly arrived at a condition beyond that of nomadic life. Other South American *models* are to be seen in the Exhibition; for instance, there is one of a native raft in the Brazil department, although none, as far as we could find, of the far more curious flying bridges which span the awful abysses of the mountains. Mexico and New Grenada, Chili and Peru, are no longer subject to civil disturbance so continually, whatever may be the case with Central America, but that their engineering wonders of that character, from very old times, might have been produced with advantage.

Western Africa offers articles so various in kind, so abundant, and so valuable in commerce, that, when compared with the barbarism of the people, they irresistibly compel the admission, that trade alone does not solve the problem how men are to be civilised. These Africans, in particular, are most active merchants; and they have one usage which should strongly recommend them, as it furnishes a proof of their respect for honest dealing. If a bale of goods is not found at its place of destination to answer the sample, it may be returned to the broker, who is bound to get compensation from the original seller to the purchaser. The specimens of cotton, both raw and manufactured, from this region, are numerous. The plant grows everywhere; and if our best sort shall be found worth substituting for the native varieties, the habits of the people are prepared for its adoption.

6. GROUP OF OBJECTS OF VERTU. BY WERTHEIMER.

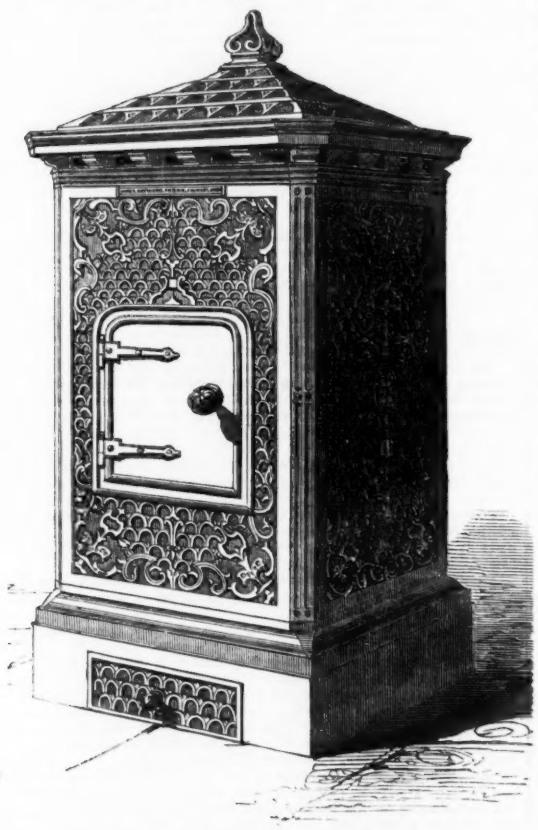
The pottery works are very various, although calabashes, or vegetable vessels, are common. Dyes and medicines are abundant; and it is to be noted with regret, that poisons are familiar to the natives for the worst purposes. One article of export collected by the rudest people of West Africa is of great value, and it has an interesting history. This is palm oil, the import of which has increased since the abolition of the slave-trade, from a small amount, to more than 20,000 tons a year, worth more than £600,000. This new African trade in a legitimate commodity is interesting, as a proof of the correctness of judgment in one of the earlier friends of Negro emancipation, whose very name has been forgotten in the long catalogue of the friends of that cause. Mr. Thomas Bentley, of Liverpool, a predecessor of Sharp, and Clarkson, and Wilberforce, was sagacious enough to perceive, and bold enough to maintain, when a merchant in that slave-trading port, that some articles existed in Africa more suited to the conscience and commerce of England than Negroes. He told his fellow-townsmen that they should send their ships, not for slaves, but for *palm oil*; and now it is for Mr. Thomas Bentley's palm oil that the very fleets are sent, which, but for the efforts of such men as he, would still be groaning with human victims. This good man became the partisan of Wedgewood, in the famous potteries, to the beauty of which his excellent taste secured their most successful character.

From Western Africa there has also been sent to the Exhibition the small leathern bottles of dye for the eyelids, which along with other like usages have been cited to prove the assimilation of the Negroes with ancient Egypt. The real aboriginal products of both regions are well worth comparing together, in order to illustrate the question.

But the superior condition of modern Egypt, in point of progress, has led its exhibitors to confine their contributions [too much [to the results, of

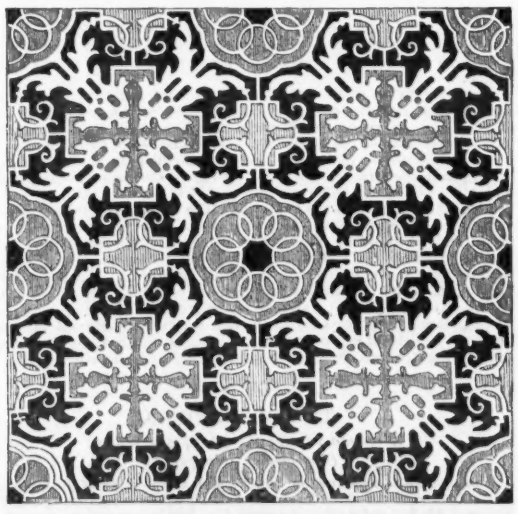
7. BRULE-PARFUM. BY GUEYTON.

civilised industry. Indeed, not only Egypt, but Tunis and Algiers, to judge from products thence on this occasion, must be excepted from the class of barbarous states, more absolutely than it is to be feared is consistent with the real conditions of a large portion of their people. Their contributions are chiefly showy silks and woollens; but, as is betrayed in the case of some articles from Algiers, to which the prices are fixed, their dearness really detracts much from their value, paradoxical as this remark may seem. In truth, a barbarous method of manufacture renders cheapness impossible, without in the slightest degree improving quality. The example shows how indiscreet has been the refusal of the Commissioners to let prices be set to all the articles exhibited.



10. HALL STOVE. BY MESSRS. HAYWOOD, OF DERBY.

In one Tunisian article, barbarism, and the cause of its duration, are abundantly demonstrated. This is clear in the Arab's tent. Snug enough it is, and by its lowness easily sheltered from the wind, and even the sand-waves of the desert. Its camel's hair roof, too, is doubtless water-tight, but it marks the nomade man; and beyond all doubt the people whose voluntary habit is to wander, is scarcely less incapable of intellectual



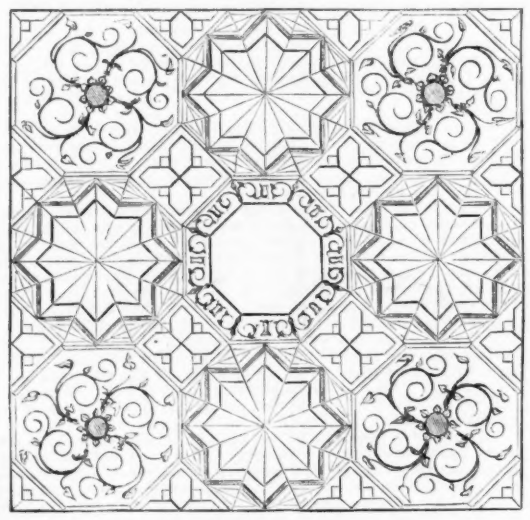
13. DESIGN FOR TILE PAVEMENT. BY J. W. PAPWORTH.

and social culture than the more unhappy beings who, like the Indians of North America, are perpetually moved from home to home by the tyranny of their white invaders. It is probable that the principal cause of the unsubdued barbarism of our gipsies is their life of strolling.

The Cape of Good Hope has sent one article deserving special notice—the ivory of an elephant's trunk, of 163 lb., which must be a fine specimen. Ivory is chiefly bought of the natives; and, from Mr. Gordon Cumming's account of his own trading, its mystery may be interpreted to mean extraordinary hard dealing on our part. He had carried into the interior muskets, for twenty of which he had paid £16, and obtained ivory in exchange at a profit of 3000 per cent., which, as he was informed by merchantmen, was "a very fair profit." To be sure, the

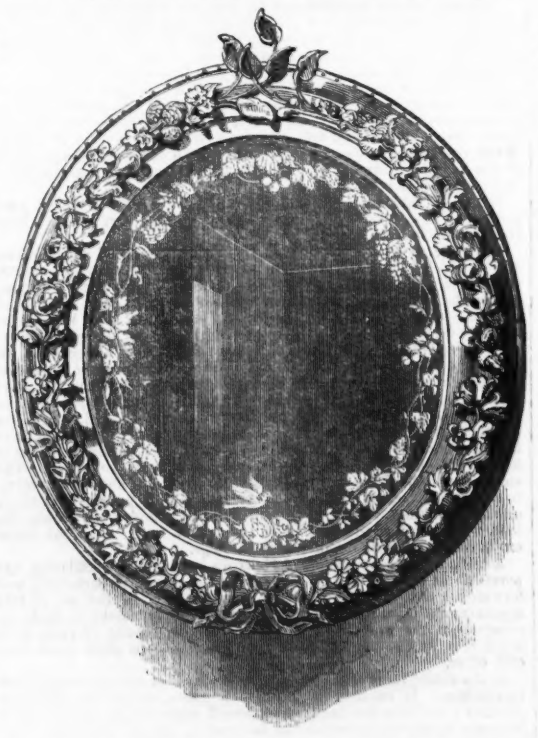
8. GROUP FOR A FOUNTAIN. BY M. ANDRE.

manner in which the black chief, of whom he bought the ivory, had obtained it, by oppression inflicted on the Bushmen who killed the elephants, invites little consideration for that chief; but the whole story furnishes a fresh argument in favour of the civilisation which we consumers of this beautiful product of the desert are bound to use all means to substitute for its existing barbarism. The South African assortment of *karosses*, or cloaks made of the skins of wild animals skilfully dressed, ostrich feathers, and ivory, represent the Aboriginal produce, for which the Cape traders carry into the wilderness to the native tribes, beads of many colours and sizes, brass and copper wire, knives and hatchets, clothing, guns, ammunition, &c.



11. PARQUET FOR FLOORS, FROM RUSSIA.

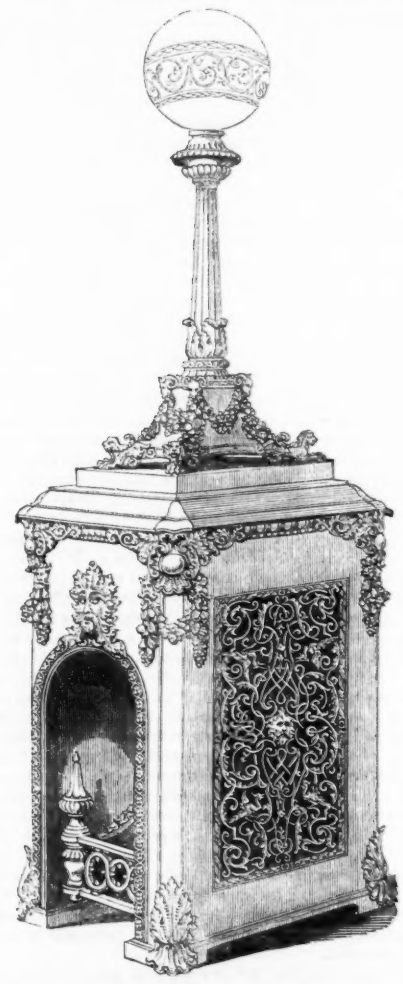
There is a melancholy tribute paid in the Van Diemen's Land contribution to its now extinct Aborigines. In our forty years' possession of that settlement we have utterly destroyed them, by as atrocious a series of oppressions as ever were perpetrated by the unscrupulous strong upon the defenceless feeble. Yet these poor people had tastes and industry too. Their bread appears to be worth reviving as a new truffle for soup by the gourmands of Hobart Town. The specimens of the root exhibited weighed 14 lb. They obtained a brilliant shell necklace by soaking and rubbing off the cuticle, and gaining various tints by hot decoctions of herbs. They procured paint by burning iron ore, and reducing it to



14. PATENT ORNAMENTED GLASS. BY W. KIDD.

9. CARTON PIERRE ORNAMENT FOR A CEILING. BY JACKSON AND SONS, RATHBONE-PLACE.

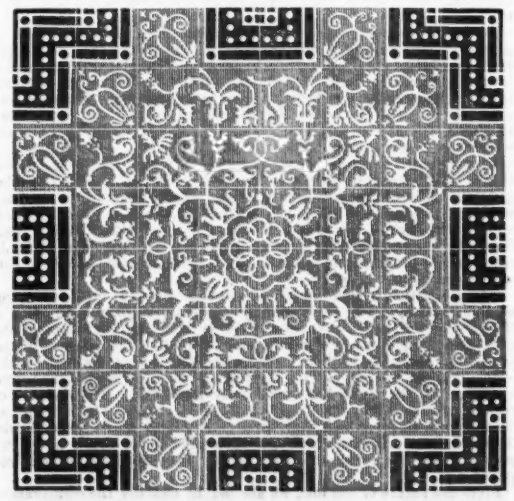
powder by grindstones. They converted sea-shells and sea-weeds into convenient water vessels; they wove baskets, and they constructed boats with safe catamarans. All these things are exhibited. Surely, then, the men whom their greedy supplanters admit to have done this, and whom



12. HALL STOVE. BY MESSRS. BAILY AND SON.

the least possible pains ever bestowed on them proved to be capable of much more, ought not to have been hunted down, as we know they were, and then almost inveigled to be shut up in an island too small for even the few remaining.

The New South Wales contributions offer no sign of the Aborigines' works, and probably the country contains no longer any trace of the



15. DESIGN FOR TILE PAVEMENT. BY W. A. PAPWORTH.

people; as Newfoundland contributors do not pretend to an interest in the works of the lost people who once inhabited it. New Brunswick seems to have nothing to show but the pretty models of an Indian family, the kindness of whose character is attested by having protected two maiden ladies, whose father emigrated from the United States after the Americans war, and settled among the tribe some 70 years ago. The

remnants of the Indians and the remains of the Royalists must have had many subjects of sympathy, and many feelings in common, to have maintained so long a career of mutual respect.

The subject will be resumed, more particularly in reference to some contributions alluded to, which are not yet arranged. The whole amount, however, of Aboriginal articles to be exhibited is likely to be smaller than it would certainly have been, but for circumstances deserving of notice. Of late years the political condition of the Aborigines connected with various civilised nations, has been a subject more than usually interesting to the public. The emancipation of our Negro slaves in 1834 having in a great measure settled that question, the attention of philanthropist was free to be directed to the persecutions suffered by the Aborigines of our colonies. This was an extensive inquiry, and some reforms took place. Then a reaction occurred; until at length the old law of force and oppression extensively recovered its influence. In this state of things the Exhibition was planned, upon the principle of an universal invitation of the nations of the earth, to bring specimens of their industry and art under a common inspection.

The Commissioners made no exceptions; but it was impossible that they should grant a privilege, or any special advantage, even to the least favoured in actual condition. The collection of articles to be exhibited was necessarily left to the cast and activity of the contributors and their various supporters. France was to take care of her people, Germany of hers, America of hers. The peculiar claims of the less advanced Aborigines for aid were discussed; but all that could be done was carefully to make known in various quarters that the Exhibition would be open to them. The result has been, that the same circumstances which render them inferior to civilised men in accumulated property and in acquired knowledge, have operated to leave their show of industrial development in the Exhibition somewhat meagre, whatever equality of capacity may be conceded to them, and however acute their natural intelligence. It is an occasion, however, upon which the Aborigines' protectors ought to have seized with eagerness, in order to bring evidence of that natural intelligence and equal capabilities in visible array before the world when so favourably disposed to allow all their due.

HEAT, AND ITS APPLICATION.

The applications of heat, and the adaptation of contrivances for its generation and control, naturally deserve in this variable climate a full attention. In the Building itself, the regulation of heat demands consideration, and extensive contrivances have been used for securing the ingress of cool air, and the egress of that which has become heated. Now, all ventilation is founded upon the simple principle, that cold air is heavy and subsides to the bottom; whilst hot air is light, and rises to the top. At first sight it may appear, that, for the purpose of ventilating any building, it is only necessary that holes should be supplied at the bottom of the apartment for the air to enter, and other holes be placed at the upper part for the hot air to escape. Practically, however, ventilation is far from being so simple an affair; and if there is anything more difficult than another for a scientific man to accomplish, it is that of carving currents of air to obey his will, and take that course through any building, and with any velocity, which he may desire. From experiments which we have instituted, we apprehend that the satisfactory ventilation of the Crystal Palace is a matter of very great difficulty; from the interference which the cooling surface of the glass will naturally have on the heated air as it ascends. In a chill night the chilled air falls sensibly from the roof, and at all times it must seriously interfere with the operations of the scientific ventilator; and hence it may possibly turn out that the mass of openings which Paxton has so admirably placed round the base of the Building, together with those of the upper part, will be insufficient to ventilate without draughts. We advise therefore, our friends not to postpone their visit until the heat of a summer sun shall strike with full force upon the Building. We noticed, a few days since, that the air was entering at the galleries at apertures through which it should have made its exit. Whatever may be the difficulties, there is no doubt that they may be satisfactorily remedied by those who have made the physical forces obedient to their will, and obtained the result which has been shown within the Building.

Many persons believe that they have caught serious colds in the Building; but we attach no importance to this belief, because an epidemic of influenza and sore throat has been very prevalent this spring, and those who have been afflicted at this particular period are quite as likely to have contracted their malady elsewhere as in the Building.

Amongst the ventilating contrivances which are exhibited, the glass pane with small fissures must be noticed. Wherever we have seen it employed it has only favoured the entrance of air, and not promoted its exit, but it must be regarded as a useful appendage in some cases.

We detected one or two of Arnott's ventilators; but their remarkable paucity has much astonished us. The principle by which they act is that of closing with a very slight force acting over a large surface; and it is very amusing to observe how lively they become in south-westerly winds, when there is a tendency to a downward current. We cannot speak too highly of the simple invention of this accomplished physician, and doubtless some modification of this device will be employed for many generations.

The production of heat in this country is almost exclusively accomplished by the use of coals or gas, which are allowed to combine with the oxygen of the air. Wood fires are found in these densely populated countries so expensive, as only to be allowed to be used as a luxury of the rich. It is fortunate that in this climate nature has provided us with an ample stock of coal to cheer us in the dreary winter months, and at several departments some beautiful specimens of coal may be seen. Some blocks of great size are placed outside the western extremity. Coal principally varies in the quantity of volatile matters which it contains. In our mines bituminous coal mostly abounds, and that which is used in London has much volatile matter, which gives a good blaze, makes a cheerful fire for an open grate, but has the disadvantage of giving off copious blacks to form a canopy to overhang the metropolis, and cut off from the inhabitants a large share of that light of day which is due to them. In the United States, on the contrary, the coal contains less gaseous matter; hence it burns with little flame, like coke, and generally requires close stoves for its combustion. A very interesting specimen of coal from the Lonaconing mine, in Maryland, is exhibited, which is intermediate between the anthracite and bituminous coal, and contains scarce a trace of sulphur. It is well worthy the attention of all interested in the production of heat. It is known to geologists that this field of coal is very large. The Lonaconing mine, from whence the specimen is taken, belongs to a number of gentlemen of high standing in Paris, London, and America; but our attention has been drawn by one eminent City gentleman to the fact, that Mr. Detmold calls himself proprietor in the Catalogue. We trust this is only a misunderstanding or a misprint.

The production of heat by the combustion of gas is now occupying much attention, and is daily coming into more extensive use. One of the greatest difficulties attending its use is the irregular pressure of the gas; and at night, when the companies think that the majority of the population are safely in their *cubicula*, the pressure is lowered to the lowest possible amount, and we have found, in experiments conducted by gas, that the light has occasionally gone out. The question of economy between the use of gas, coals, and coke, must be determined for the purposes for which they are employed; but, as a general rule, from actual experiments which we have tried, gas is much more expensive than the other materials where long-continued heat is required.

From the nature of the fuel, we are led to consider the contrivances in which the fuel is burnt, and the Exhibition is particularly rich in stoves of various denominations. For ordinary dwelling apartments great advances have been made in modern times, the tendency being to place the fire almost level with the feet, with the unsightly ashpit completely concealed from view. These stoves, whilst they are in the highest degree elegant, are costly in their construction, and great care should be taken that they be not placed sufficiently near any woodwork to cause its ignition. We remember to have seen Sir Robert Peel, within a few days of his death, studying one of these stoves with great interest, at the *soirée* of the Civil Engineers, and he took away one of the papers with him to study it more at ease. We shall certainly recommend no person who can afford it to be without this form of stove; for the heat being applied at the very bottom of the room, is diffused more genially through the apartment; and the lower parts of the body, which, with long sitting, are so particularly liable to feel cold, derive warmth more readily than with the ordinary grates. These stoves are furnished with bright reflecting surfaces, to throw the heat into the room; and in one case we noticed the fire-place to be placed about the focus of a parabolic reflector, which distributed the rays of heat in a parallel manner.

In our opinion, the simple radiating and reflecting stove is incomparably superior to any other form for rooms in which persons ordinarily dwell. There is a form exhibited by Mr. Pierce which he terms the pyropneumatic stove, which has not only an open fire-place, but which has a contrivance by which air is admitted from without and circulates through the room. The objection we raise to all these stoves is the effect which they have in causing currents of over-dry air to pass through the apartment, and which have somewhat the effect of a blighting easterly wind. The regulation of the moisture of the air by such contrivances is possible, but difficult; and, therefore, upon medical grounds, we do not admire their use in ordinary dwelling apartments. For churches, halls, and other places where extensive areas have to be warmed, and the room is only used for a short time, they may, doubtless, in many cases, be adopted with advantage.

We must consider, for many reasons, that any close stove is perfectly abominable for dwelling-rooms. In the first place, the blazing fire is lost to view; then, the radiant heat, acting upon the skin in a cooler room, has a different and more salutary effect than warmer air without the radiant heat. In America, however, close stoves are most employed; and we were, therefore, curious to observe what our Transatlantic brethren have produced. From conversations which we have had with Americans, it appears that a considerable majority of stoves in America are upon the closed principle; but still those exhibited are not of the kind ordinarily employed in that country

The chandelier parlour stove, which received the gold medal, is exhibited, and it is principally employed with anthracite coal. To English notions, such stoves would be considered intolerable; but the Americans declare that they would not use our stoves and bituminous coal, with the copious showers of blacks which pour from every chimney, on any account. They state, however, that open fireplaces, with anthracite coal, are now being employed, and that they like the appearance of the burning mass much better than the fires which they have observed in this country. The Americans bitterly complain of the soot which is carried over everything in English cities; and they further state, that the smell emanating from our coals can be immediately recognised by them.

The kitchen-ranges are almost innumerable; and certainly, by their combined action, with a Soyer at each, thousands might be dined from those exhibited. They may be divided into two classes—those which have open fires, and those which have close grates. The latter kind of stove is virtually a furnace, and, upon that account, in our opinion, should only be trusted in the hands of the skilful cook. Of the other kinds, although we gave them a careful examination, we dare not venture any opinion, as their excellence depends upon such niceties, that any person who wants a kitchen stove had better get testimony from the cook than the philosopher, and upon no account trust to the simple statement of the manufacturer, each of whom considers his own child the best.

For culinary purposes, the use of gas is daily increasing, and Mr Defries has carried off the palm for stoves destined for its use. The most complete contrivances which we have ever seen for gas-cooking are those which have been erected for the Marquis of Westminster, at Eaton-hall, by Mr. Potter.

We are not quite convinced about the economy of gas for roasting, but it should be remembered that there is no waste, that the gas could be turned on when wanted, and turned off when the operation is finished; and we feel bound to state that some of our first practical men have the highest opinion of gas ranges. If the gas companies can make hydrogen and carbonic oxide as cheaply as is stated, there is very little question that gas-stoves would supersede the other forms. We wish we could persuade one company to supply the gases for heat, and the other the gas from cannel coal for light. For boiling, stewing, and baking, there can be no question of the economy of gas. Whilst speaking of Mr. Defries' stoves, we must not, at the same time, omit his gas-bath. It is a useful and economical application of that material, and will enable hot baths to be used extensively in the houses of the middling classes.

With regard to gas-stoves for heating, such as Deane's cylindrical gas-stove, Edwards's atropyre stoves, they admit of being used where others cannot be employed; and, in other cases, where stoves have only occasionally to be employed, they may be conveniently adopted: but in all instances where a high temperature has to be maintained, or the heat has to be kept up for a long period, their employment is too expensive to be generally used. We desired to heat a hot-house by this plan, and the gas company laid down a pipe for that purpose; but we found that the great consumption of gas was such that we were soon glad to return to coke. Mr. Strode has contributed one good gas kitchen-range; and a workman in Mr. Feetham's employ, to the honour of that amiable manufacturer, has been allowed to exhibit a stove adapted for either coke or gas.

We are much pleased with the American cooking-stove, called the Union, as it appeared to us to be a very economical mode of applying heat. With regard to different nations, we should hardly consider that the tropical countries would have furnished specimens of stoves, and none are accordingly sent.

Belgium, whose manufactures of iron are extensive, has communicated several stoves, and Austria has also shewn some cooking apparatus. The Russian manufactures have not yet developed themselves, and we shall look with a curious eye upon the contrivances which these people adopt to give warmth in their frigid climate.

In this article we have nothing to do with the designs, and therefore we shall simply mention that they are throughout the English department of surpassing beauty. So costly, in fact, have they been in some cases, that an article is said to have entailed an expense of £1000. When the visitor inspects this section, he will doubtless be astonished at the varieties of design, and the astounding number of beautiful articles which are exhibited.

Messrs. Knight have shewn the best gas burners for chemical purposes. In all our London laboratories, the greater part of the operations are conducted by means of gas.

We were glad to observe, that, besides the display of drawingroom stoves, which have been got up in so costly a manner as hardly to fall within the means of the middle classes to acquire, a stove for a cottage has not been forgotten, and a most excellent one has been contributed by Mr. Nicholson, of Newark-on-Trent. It appears that Mr. Leslie, by a patent taken out some time ago, claims all forms of stoves without bars at the bottom, and hence this stove falls under his patent. To those who have been in the habit of visiting the domiciles of the poorer classes, the necessity of a good economical stove will readily be apparent. The stove before us appears to be of this character, for the fire-place is so small as to admit but a limited amount of coal, whilst the existence of an oven and a boiler must greatly tend to the comfort of the industrial classes. If the stove is really as practically good as it looks, we should rejoice to find it in every domicile of the artisan. The stoves now to be found in the homes of the poor are chiefly, according to our experience, old bed-room stoves, and can be purchased at seven or eight shillings. This stove is about two pounds; but we beg the landlord to consider the comfort of the tenant rather than the small extra cost in the first building of the cottage.

Messrs. Deane have exhibited Hazard's heating and ventilating apparatus. It consists of a close stove, with pipes carried backwards and forwards from it till they come to the chimney, In the use of this apparatus the pipes must be joined very truly, or smoke is liable to escape into the apartment. In a philosophical point of view, it is found that for heating air it is very indesirable to place pipes over each other.

In the model-room there is a contrivance called Green's patent fuel economiser. It consists of a series of tubes, which pass into the chimney; and thus the heat, which would otherwise be carried off, is imparted to the water, which can be used to supply the boiler. Attached to the pipes is a very pretty contrivance for scraping off the soot. The same party shows a means for warming air, by pipes placed in an ordinary chimney, which communicate with the outer air. This scheme is objectionable, because the hot air is let into the upper part of the room, where already too much heat is apt to collect. If any of our readers have never tried the experiment, we should advise them, especially if they burn gas, to mount a pair of steps, and ascertain the state of the air at the top of the room, and they will be astonished at its high temperature and noxious qualities. This plan would answer admirably to warm a room above that in which the fire is.

Amongst the machinery the visitor may notice contrivances to warm cylinders in certain parts by steam. All these matters we shall hereafter consider in detail. They may also notice a gasing apparatus, for removing the fine particles which adhere to thread.

The generation of steam from heat becomes an important consideration with engineers. They are, however, pretty generally agreed that the heat should be applied over a large surface. Those of our readers who have never inspected the interior of a locomotive, will now have an opportunity, and there they may observe the numerous tubes which pass completely through the boiler from end to end. The object of the tubes is to allow the heat from the fire to act upon a large surface of water, because the whole draught of the fire is compelled to pass through them before it can reach the chimney.

In apparatus for distillation, the French have contributed by far the largest platina still, for the distillation of sulphuric acid. In this country, where so much of this acid is made, the manufacturers might have sent one of their large stills, and, doubtless, Messrs. Johnson, of Hatton-garden, might have contributed some astonishing ingots of platinum; but, as we have only to do with objects exhibited, we must award to foreigners the first place in this department of manufacture. In earthen worms our potteries have contributed the largest specimens.

We must not omit the mode in which sugar is evaporated in vacuum pans, at a low temperature. It is well known, that, the less the barometric pressure, the lower is the boiling point. On this account, the monks of St. Bernard never make their tea with boiling water, because they reside at so high an altitude. By a beautiful application of science, the sugar-bakers exhaust their evaporating pans; they diminish the barometric pressure, and thus are enabled to boil at a very slight increase of temperature. Messrs. Pontifex and Wood have shown the best apparatus of this kind.

With regard to manufactures dependent upon heat, the Building itself is one of the wonders of the world. When its almost countless rows of iron pillars are observed, the mind cannot fail to think of the tons of coal which have been consumed, and the Pandemonium-looking flames which must have issued from the furnaces in the smelting of the iron. Again, when we see the innumerable panes of glass, the furnace again comes to mind; and a model of a glass-house by Hartley, together with the melting-pot in which the glass is fused, is exhibited at the extreme eastern part of the Building. In former Numbers we have already stated that the glass of the Building was made by Chance, of Birmingham. Amongst other applications of heat the visitor may observe huge earthen pots, and the more delicate specimens of porcelain. We have amongst castings the enormous hydraulic press which raised the Britannia Bridge, and the delicate Berlin castings. Perhaps, however, as far as novelties are concerned, the castings of zinc are as remarkable as anything in the Exhibition, as, heretofore, that metal was not thought susceptible of being thus used. There is no brass casting so large as that of the Wellington statue at the top of the marble arch, though there are cannons and other brass castings displayed over the Building.

We do not think it at all necessary to call attention to the various culinary utensils by which heat is applied to our food, and which are exhibited in great profusion. There is one, however, that deserves to be noticed for its name, as it is called the anhydrohepseterion, and is really a potato-cooker without water. Such a gentle name for a gentle London cook to pronounce tickled our fancy mightily, and we can imagine a page giving instructions to the cook to be sure to put the potatoes into the anhydrohepseterion in good time for his master's dinner.

We have various examples of contrivances for quenching fire, which, perhaps, are pretty necessary in such a building. From Canada a very showy fire-engine has been brought, and we are very curious to test its powers against our large fire brigade engines, which are of such service in London. In the dry atmosphere of America fires are very common, and, therefore, it affords a good school for engines. Besides many specimens of fire-engines, Philips's fire annihilator is also shown, and is ready for use on any emergency. Instead of pumping water, an incombustible gas is discharged against the flame, which quickly extinguishes it. There is no doubt that it will instantly extinguish flame, but we fear that it would not be sufficient to cool a large bulk of red-hot matter; at any rate, the fire brigade in London continue still to throw their volumes of water whenever a conflagration occurs.

Fire-escapes are abundantly represented; but continuous balconies and a trap door at the top of the house are, to our mind, the best security against the ravages of flames. Mr. Walby has exhibited his escape; there are also dressing-table fire-escapes, sash-bar fire-escapes, and numerous contrivances about the Building, which doubtless, after the sad loss of life last Sunday, will be inspected with great interest.

Various contrivances to protect books, papers, and valuable documents against the ravages of fire are exhibited at the Building. They resolve themselves into two classes—those which resist the action of fire from being non-conductors of heat, and those which give off a gaseous material. The best specimen which we have seen is manufactured by Mr. Chubb, of St. Paul's Churchyard. Its case contains such an extreme thickness of non-conducting matter, that we should not hesitate to trust any document with it, no matter how important, in any moderate fire. We do not imagine that in fires like that of Fenning's-wharf, where the iron girders melted, any iron surface would effectually protect combustible matter. Some iron safes are also shewn in the Foreign department.

Measurers of heat are not particularly well represented. Thermometers, as our readers doubtless know, are principally made in London by the Italians, and very few which are made are sufficiently accurate for scientific purposes. With respect to the few which are shown, we do not pretend to speak of their worth, which can only be ascertained by experiment. In the American section Mr. Erichson exhibits the stand of a pyrometer, but the instrument itself has not arrived at present. As far as work is concerned, the dry and wet bulb thermometer made in one stem, by Mr. Negretti, deserves the highest commendation; and, if the accuracy be equal to the excellence of construction, it must be regarded as one of the most wonderful pieces of glass-work in the Exhibition.

Taking a review of the entire applications of heat, we must admit that all its phenomena are not as well represented, in a scientific or educational point of view, as they might have been, with a little management on the part of the Executive. Nevertheless, in its leading practical applications—whether we regard the Building itself, which has had its origin in the furnace, or whether we regard the manufactured articles exhibited—there can be no question that it is the most astounding collection which the world has ever seen. The three great forces, electricity, light, and heat, have contributed their full share to the World's Fair; and, in recording the manner in which these forces have been made obedient to the will of man, there can be no question that the advancement made in this century is truly surprising. The philosopher must continue his labours, the manufacturer must take advantage of the discoveries of philosophy; and, if we only continue at the same rate of progression, fifty years hence the rich may enjoy increased luxuries, the poor, additional necessaries, and all classes will have further means of enjoyment, of which at the present time they have no conception.

THE ENGRAVINGS.

1.—GLASS FOUNTAIN. BY MESSRS. OSLER.

(Engraved on front page.)

This magnificent production, which stands in the midst of the transept, forms a prominent feature in the *coup d'œuil* which meets the eye of the visitor on his first entrance at the south door, besides, on nearer inspection, producing a grateful effect by the brilliant colours radiating from the various angles of its surface, and the bubbling sound of waters continually flowing and playing over it. This fountain rises to the height of 27 feet, and is composed entirely of pure flint crystal, cut into the most elaborate forms. The stalks to the overshading projections are cut in prisms; and the latter, supported by spandril-pendants, are represented as the result of crystalline droppings. The superior plinth, which is of marble, is surmounted by a minor one of glass, and adorned with shells, introduced with excellent effect. The water falls in three separate

masses, the upper one springing gracefully over the curved surface or rim of the glass orifice, which crowns the whole structure.

2—ARTICLES OF COTTON-MACHE. BY J. HART.

These are specimens of a most interesting manufacture, the invention of Mr. Hart, wherein waste cotton is applied to the construction of articles of furniture, something after the manner of *papier-maché*. It is equally applicable to articles of utility and ornament, such as boxes, tables, candlesticks, fire-screens, &c. The surface is susceptible of a very grain-like appearance, which is particularly exemplified in the panel on the larger box, which is composed of muslin only. The design for a table-top is novel in appearance

3.—UPPER PORTION OF A NORMAN WINDOW. BY GIBSON.

This very beautiful window has been designed and executed by Mr. J. Gibson, of Newcastle. In its arrangement it comprises five circles: in the upper one is represented the *Agnus Dei*, within a glory; the others are illustrative of the Nativity. Three of these subjects are copied in the principal Engraving and in the two smaller ones; they respectively represent the Annunciation, the Holy Family, and the Adoration of the Magi. The colouring of the whole is very rich and harmonious: the tracery between the circles is principally ruby or blue, and is very beautifully designed.

4.—ANOTHER PAINTED WINDOW. BY THE SAME.

This is another highly creditable specimen of design and colour in window-painting, by the same. These works are to be found, with others similar, by other hands, in the eastern portion of the North Gallery.

5.—FOUNTAIN OF EAU DE COLOGNE.

This little fountain is especially interesting to lady visitors, as affording a constant supply of Jean Marie Farina's eau de Cologne for the handkerchiefs of all comers. It stands in one of the Austrian rooms, amongst Leistler's beautiful furniture.

6.—GROUP OF OBJECTS OF VERTU. BY WERTHEIMER.

This brilliant group comprises, first, an elegant casket, Louis Quartoze style, of or molu with porphyry inlaid; second, a casket, or molu, with six panels painted enamel upon porcelain, besides other similar enrichments on the lid; and third, an inkstand and penholder of most elegant shape, also in or molu and porcelain. Nothing of the kind can be conceived more *recherché* and tasteful than these objects, which stand in the sinister department of the main avenue.

7.—A BRULE-PARFUM. BY GUYTON.

An elegant little table ornament in bronze, for the purpose, as its name denotes, of burning perfumes.

8.—GROUP FOR A FOUNTAIN. BY ANDRE.

A very spirited group in cast iron, intended for a fountain; the design both original and appropriate.

9.—DESIGN FOR A CEILING. BY JACKSON AND SONS.

A very pretty device in *carton-pierre*, for ceiling decoration.

10.—HALL STOVE. BY HAYWOOD, DERBY.

A very handsome stove, combining elegance with substantial appearance; cast by Mr. James Haywood, at the Phœnix Foundry, at Derby, and one among many highly creditable productions exhibited by him.

11.—PARQUET FOR FLOORS, FROM RUSSIA.

Russia seems to excel in the ingenious line of decorative art which concerns the inlaying of floors in various coloured woods, in divers devices. Amongst some very handsome specimens of the kind exhibited, is that which we have copied in our Engraving. The design is extremely rich, and the general flow of the lines, both straight and curved, very harmoniously blended. It has been impossible, however, to represent in the Engraving the almost endless variety of colours in which the design is worked out; the original must be seen to be appreciated.

12.—HALL STOVE. BY BAILY AND SON.

Stands in the main avenue, where it has an extremely ornamental effect. The design is extremely elegant; the panels in open-work or molu; and above, upon a slab of marble, is a handsome lamp.

13 & 15.—DESIGNS FOR PAVEMENT. BY J. W. AND W. A. PAPWORTH.

Two very pleasing designs, and likely to be highly effective.

14.—PATENT ORNAMENTED GLASS. BY W. KIDD.

A very elegant piece of furniture; the carving of the frame, and the decorative character of the glass, extremely chaste.

THE HISTORY OF INDUSTRIAL EXHIBITIONS.

BY WILLIAM BLANCHARD JERROLD.

(*Continued from page* 436.)

CHAPTER V.—(*Continued.*)

THE EXHIBITIONS OF BELGIUM.

THE last industrial exhibition of Belgium, held in the year 1847, was remarkable for a feature, the importance and wisdom of which it is impossible to overrate. The jury for this exhibition were called upon by the then Minister of the Interior, in addition to the usual labours devolving upon an exhibition committee, to arrange a plan for the foundation of a new order of rewards, to be specially reserved for working men who distinguished themselves by their lives and their excellence as workmen. In addition, this jury were further instructed to inquire into the means at hand for the formation of societies in which the savings of workmen could be placed to the best advantage. The letter of the Minister of the Interior on this subject well merits place in a history of industrial exhibitions.

FROM THE MINISTER OF THE INTERIOR TO THE JURY.

BRUSSELS, September 9, 1847.

Gentlemen,—The labourers and artisans who work under the direction, and for the profit of masters, have not up to the present time participated in the rewards and honours which the Government have been anxious to award to industry. Working-men—more than other classes—would esteem highly any public rewards accorded to them; and their emulation being in this way awakened, would lead them to improve as labourers and citizens. Medals of honour might be distributed to workmen recommended by their masters, as skilful, well-behaved, and devoted to their families. By withholding such distinctions from workmen who were discontented, destroyers of discipline, not punctual in their hours, or given to drunken habits, their manners would in all probability be improved, and lessen the necessity for the imposition of those fines which are now serious evils in manufacturing communities. The medals should be manufactured to be worn at the button-hole, and should bear the name of the owner, with the words "*Récompense Nationale.*"

M. ROGIER, Minister of the Interior.

M. Rogier's plan was not to strike medals to decorate every good workman in Belgium, but to do an act of justice to those men and women who had realised the conceptions of the manufacturing exhibitors. It was arranged finally, that a thousand medals should be struck, and it was estimated that of these about two hundred would relapse to Government every six years, so that this number could be awarded at every exhibition. The medals given to women differed slightly from those accorded to men, bearing the words "*Habilité, Moralité,*" instead of "*Récompense Nationale.*" At the distribution of rewards to the exhibitors of 1847, nineteen workwomen (of whom nine were lacemakers), and 201 workmen received decorations. The policy or propriety of giving a reward to a man who has brought up an unusually large family upon the smallest possible pittance of wages, is at least questionable; but the just recognition of the workman's relation to the manufacturing condition of his country, cannot be viewed with displeasure by any mind the vision of which is not distorted.

The exhibition of 1847 was opened on the 15th of July in that year; and the price at which the public was admitted was fixed at ten sous on three days of the week. Three days, weekly, the exhibition was opened free; and on the seventh day, was given up entirely to the jury. This exhibition included very few exhibitors of the staple produce of the country—flax; a deficiency which the jury lamented, and for which they could, in no reasonable way, account. Linen manufactures, however, had made rapid and indisputable progress. The Société de St. Leonard, of Liege, rewarded at the exhibition of 1841 by a gold medal, and the Société de la Lys, of Ghent, had, respectively, doubled the extent of their establishments since that time. The progress of these societies was acknowledged by the jury on this occasion with the recal of the medals given in 1841. The depressed condition of the cotton manufacturers of Belgium kept them from this exhibition, as from the last; even printed cottons found only five representatives. In specimens of rich lace, this exhibition also showed a falling off in comparison with that of 1841. Ypres and Courtrai, the great centres of the Valenciennes lace manufacturer were almost without representatives. In the department of metal manufactures, the jury found ample consolation for the deficiencies in that devoted to textile fabrics. Iron manufactures, which in 1841 were in a complete state of stagnation, began to revive in 1844, as railway speculation increased and the price of English iron rose. Over-production, however, and the mania of 1846 were just then beginning to produce their lamentable consequences; but these were not sufficiently developed at the time of the opening of this exhibition to make iron-founders indifferent as to the representation of their great industry. Accordingly we find the metallic wealth of Belgium splendidly developed in every possible way at this exhibition. At the distribution of prizes on this occasion, M. Charles de Brouchere, president of the jury (and whose name should receive honourable mention in any notice of Belgian exhibitors), addressed the Minister of the Interior in these terms:—"This festival, which crowns the glory of our industrial exhibition, receives particular *éclat* from the fact that at this exhibition agricultural industry has taken its place beside manufacturing industry. For the first time we behold the sources of our national wealth united and intermingled; for the first time the government extends its rewards to all classes of the industrial community, and thus inaugurates a happy future for Belgium. The exhibition of 1847 is an advance upon all its predecessors, both as regards the number of exhibitors and the character of the articles exhibited." This eulogy was deserved. In textile fabrics, in machinery, in cutlery, china, and hardware, in the chemical arts, and in beauty of designs, the Belgian exhibition revealed a hopeful and happy picture of promise in the future. All who admire an energetic and spiritual nation, will hope to find this promise fully realised.

CAAPTER VI.

THE EXHIBITIONS OF SPAIN.

CONTRASTED with the commercial condition of every other European state, Spain presents a doleful picture. A fecund soil, a genial climate, indigenous products of high commercial value belong to this brilliant country; but to Spaniards still cling the old barbarisms of government which every other civilised state has thrown aside. No well-ordered government has yet systematised Spanish industry—no man has yet risen to comprehend and develop the vast resources of Spain. "Spaniards," M. Ramon de la Sagra tells us, "in following out any branch of industry, are incited by immediately local wants, without regard to great productive capacity to be adapted to national and foreign markets. Surrounded by many hopeful fields of action, and strengthened by a noble love of perseverance and independence, they have launched into divers branches of trade—as a young man, stimulated by the vigour of his youth to use his strength, capriciously and hotly embraces various fields for action—from the mere necessity of action."

The traveller in Spain is struck with the apparent inactivity of the population. Although in Valencia and Barcelona various celebrated manufacturers still flourish, the general aspect of the Peninsula bears the impress of a disordered, ill-regulated social State. The vast monasteries, from which the lazy monks have retreated, may, in time, realise the hope that the whirr of the shuttle will replace the clatter of monastic feasts; but now, grass shoots in their courtyards, and the mill-dew thickens in their cells. Even the great and celebrated Bilboa carpet manufactory of Madrid is remarkable only for the history of its past; its vast galleries are almost deserted, and spiders have long been busy in the wrecks of its looms. Here and there only are a few workmen, whose handicraft still attests the excellence of their fallen industry, and serves as a sufficient reproach to a neglectful Government. Heavy duties on raw material, and the consequent existence of a gigantic contraband trade, oppress Spanish manufacturers to such an extent, that they are unable to dispose of their goods at any moderately-varying price—their value decreasing in a ratio with the increase of the contraband trade. The badness of Spanish roads, and the expense of conveying goods from the seat of manufacture to markets at a distance, are fetters which depress the industrial condition of Spaniards: but, inasmuch as all these depressing causes are removable, and as the rays of knowledge must soon reach to Madrid, in spite of ministerial opposition, it is not unreasonable to hope that the next twenty years will be years of hopeful progress in the commercial annals of the Peninsula. Already, in Barcelona, fifteen hundred pupils attend a public and gratuitous school of design; already great factories are rising in various parts of the country.

The authorities of Spain have gathered together five national exhibitions of native industry. Of these the first was held in 1827, and had 297 exhibitors; the second in 1828, and had 320 exhibitors; the third, in 1831, and had 228 exhibitors; the fourth, in 1841, had 214 exhibitors; and the fifth, in 1845, had 325 exhibitors. These numbers may be received as indicative of the manufacturing disadvantages under which the country has been and is labouring. The difficulty which the Madrid authorities have experienced in persuading even the manufacturers of the great centres of Spanish manufactures to send specimens of their skill to the capital is easily accounted for, when the expense of transit from distant provinces is coupled with the resolution of the Goverment to pay only part of this expense. The relative proportions of space occupied by the various manufacturing provinces was one-third by Madrid, one-third by Andalusia, and one-third by Castile. At the exhibition of 1845 Madrid and Barcelona almost monopolised the space given up in the old Convent of the Trinity for exhibitors of Spanish industry. Bad roads, inefficient organization, and a general conduct of public affairs quite at variance with that enlightened spirit which can alone make such displays of national service, have debased the industrial exhibitions of Madrid to an insignificance which the manufacturing advantages of the country make the more lamentable.

At these exhibitions many important branches of national manufactures have not found a place; and it was justly remarked at the exhibition of 1845, that a brilliant display might have been made of the products which it did not comprehend. The catalogue of this exhibition was sufficient evidence of the burden of the commercial laws. This document gave opposite each article its retail price, and the high figures compared with those of other countries, showed that the Spanish manufacturer, with all the natural advantages of his country, could not hope to fight foreign manufacturers in the distant and scattered markets of the world. These high prices are the results of two distinct causes—the heavy duties upon raw material, and the competition of a gigantic contraband trade.

In taking a glance at the general characteristics of Spanish exhibitions (but more particularly at that of 1845, as the most important of the five), it is easy to separate the great industries of the country from the minor but more showy branches of commercial activity. The conspicuous position accorded to silken, linen, and woollen goods, to leathers and hides, printed papers, soaps, and iron, marked an appreciation on the part of the authorities of the special manufactures which Spain, by reason of her soil, climate, and geographical position, was justified in encouraging to the utmost. Most people at all conversant with the history of manufactures, would expect to find the woollen goods, manufactured from the fleece which France so long coveted, would be of rare excellence. But we are reminded by an eminent French manufacturer, who reported to his government on Spanish exhibitions,* that the fleece of Spanish flocks is one of her old glories. After a long and almost hopeless depression, woollen manufactures are again beginning to revive. The five exhibitions which are on record, however, included only a few fleeces sent from Seville. Specimens of cloth, of but indifferent texture, were sent from Catalonia, Segovia, and Alcoy, to the exhibition of 1845, and were marked at very high prices; and the commissioners from France, who visited the convent of the Trinity, sought in vain for some samples of Spanish undressed wool. Not one exhibitor of merino or mousseline-de-laine appeared, nor were the carpet manufactories of the country represented. Silken goods of excellent quality, however, were sent from Valencia and Barcelona, and some coarse specimens from Saragossa; the China crape shawls and blonds being the finest specimens of manufactured silk. The exhibition was destitute of gloves and hosiery. A few dear and coarse pieces of plush, for hats, only served to prove the depressed condition of the manufacture.

The cotton manufactures of Spain, almost exclusively belonging to Catalonia, were represented at the exhibition by threads of various numbers (the highest of which was forty), colicoes, worked counterpanes, and printed goods. Of these varieties of cotton manufacture, the printed goods only claim any notice for excellence. These were distinguished by the brightness of their dyes, and the neatness of printing and design. They were all manufactured for immediate consumption.

Barcelona, at once the most advanced manufacturing locality in Spain, and the most vehement supporter of high protective duties in Spain, contributed the most valuable textile specimens seen in the exhibition, showing excellent samples of silk, flax, and cotton mixtures. The dearness of these goods, when compared with the prices of English and French manufactures, explained the anxiety of Catalonian manufacturers to protect themselves from foreign competition.

The exhibition included a few average samples of sound cordage and stout sail-cloth, but not one specimen of thread lace, or one piece of lawn. Printed papers occupied a great portion of the principal room. The chief seat of this manufacture is in Madrid, where labour is dear, and where, consequently, the product figures at a high price. The patterns shown were characterised as vulgar, and printed with bad colours.

Dressed leathers were also conspicuous in the exhibition. Morocco and kid, for gloves, were shown in abundance. This department of manufacturing industry showed a more marked vitality than any other. The leathers were strong, supple, and of excellent substance. The moroccos only lacked the brilliant dyes of Choisez-le-Roi to make them equal to any in the world: and the kid, which is manufactured in vast quantities, attested the superior excellence of Spain in this production to other countries.

In the department of glass manufactures a falling off from past excellence was clearly visible. The best specimens of glass came from the Royal manufactory of Saint Ildefonse; and these were coarse, ill-coloured, and, according to M. de la Mornaix, only worthy of a barbarous age. In earthenware and porcelain, a falling off was also lamentably visible. Only a few indifferent specimens of chemical products, as mineral salts, &c., were visible; but the exhibition was altogether destitute of alkalis and dyes, and minerals, and this in a country which possesses the richest lead, quicksilver, iron, and even silver mines of the south of Europe. A few bars of iron, a stray ingot or two of silver, cannot be accepted as representing the great works of M. Heredia in Malaga, the iron districts of Biscay, and the important wealth of Adra.

In goldsmiths' work and in gunsmiths' work, however, the exhibition showed signs of industrial progress, and proved that the excellencies of the past, in matters of taste, was not quite forgotten. Some excellent specimens of clockwork were also exhibited.

Spanish manufacturers contributed nineteen pianos, all manufactured on the English model, and marked at ridiculously high prices—the commonest kind being valued at from fifty to 80 pounds sterling; and square instruments, dry and harsh in their tones, were expected to realise about two hundred pounds sterling. A few guitars necessarily formed part of a Spanish exhibition; and in the list of musical instruments exhibited on this occasion figured a violin on the old Stradivarius model, which is described as an instrument more curious to look at than agreeable to listen to.

Although there was not one specimen of Spanish printing exhibited, not a few excellent samples of bookbinding and lithography appeared. Cabinet makers made but a poor appearance. The fame which the cabinet-makers of Spain have so long enjoyed, and proofs of the justice of which decorate the houses of Madrid, sent but few articles to the national exhibition. It would appear that in the resolution to establish periodical exhibitions of native industry, the Spanish authorities formed too high an estimate of their manufacturing countrymen's enlightenment. It is not to be expected that in a country where manufactures have been led to place their trust for commercial success in the strong arm of the law against foreign rivals, rather than in the excellence of their own productions, that they would hail the establishment of an institution which would lay bare to foreigners and to native rivals the inferiority of their accomplishments. It is probably in this light that the provincial manufacturers of Spain generally regarded the exhibition to which they were invited. At this exhibition, ostensibly national, neither the hemps and flax of the Asturias and the Basque provinces, the silk of Murcia, Estremadura, Castile, Arragon, and Andalusia, the fleeces which abound in every province of Spain, the cloths of Segovia, Guadalaxara, Brihulga, Valencia, and other important manufacturing towns, were to be seen. At this Exhibition there were no specimens of steel, no cutlery, no sample from the locksmith. The welcome which Spaniards have given to the proposals of the Great Exhibition Commissioners, and the zeal with which they have endeavoured to place their country in an honourable light among the nations represented in the Hyde-Park Palace, justify, however, the hope that the new manufacturing energy which has been given to the industries of Spain will at length vindicate this country in the eyes of the world, as one rich with promise, and teeming with an ungathered harvest of mineral and vegetable wealth. Everywhere, manufacturing companies have been formed of late, in Barcelona, Malaga, Valencia, Grenada, Seville. Immense factories are rising in every part of Andalusia; and improvements are now being rapidly introduced into native agriculture. At the exhibition, as an instance of advance, some fine specimens of cochineal were shown—both prepared and in the natural state, crawling upon a leaf. The system of irrigation carried out of old by the Arabs, in the province of Valencia, and which makes this territory even at the present time one of the most fruitful parts of the country, should have attracted the notice of Spanish agriculturists long ago. So perfectly did the Arabs understand this great principle of agriculture, and so soundly did they carry it out, that their administration remains intact to the nineteenth century. Eight grand canals, from which others stretch, drain the vast extent of land, and the gentle slope of the surface towards the sea carries the water off rapidly. This system is governed by a rude tribunal, known as the Tribunal of the Waters. This body consists of five judges, elected by the proprietors of the soil benefitted by the irrigation, and vested with special powers. These judges meet in the open air, at the door of the Cathedral of Valencia. Before them a rude bench is placed, at which those persons condemned to pay fines for the infraction of rules, or who have complaints to make, appear in person to plead in mitigation of the fine imposed, or to explain their grievance. The judges decide on the spot, and the execution of this sentence follows instantly, without right of appeal. No notes of the proceedings of this rude tribunal are taken, and the proprietary body submit to its decrees without a murmur. The Captain-General of the province places police at the disposal of this Arab institution, by the simple operation of which a valuable system has been preserved for ages, and sets apart this province from the rest of Spain as the *huerta*—the garden of the country. The exchange of Valencia presents a vivid picture of the wealth of the province, crowded with lightly-clad and bare-footed peasantry, bearing their loads of silk, new from their fruitful patches of land. Here, where the egg ripens to the worm, is the old Arab proverb illustrated: on the spot where the clammy stream of silk oozes from the worm, the brilliant thread is woven into garments—the mulberry-leaf is turned to satin.

Barcelona bids fair to be the Manchester of Spain. Here four great departments of industry are carried on, viz. the construction of machinery, and silk, woollen, and cotton manufactures. All the latest improvements in machinery and processes exist here, under the superintendence of Englishmen or Frenchmen. Spinning-jennies, looms, steam-engines, and other manufacturing powers, are constructed excellently on the spot. The cotton, silk, and woollen factories, chiefly of recent establishment, are constructed generally on a gigantic scale, and give employment to a large population. The factory hands of Barcelona are, however, ill-paid; and may be seen lounging about the factory yards at meal time, eating the very coarsest kind of bread, and a few onions, oranges, or radishes, as their dinner. They labour thirteen hours daily.

The result of an inquiry into the commercial condition of Spain at the present moment would, most probably, result in the conclusion that her manufacturers, with every wish to profit by the ingenuity of foreigners, and to throw themselves into the markets of the world on honourable conditions, are, as yet, enslaved by hostile duties miscalled protective (since raw material—as coals, &c., are heavily taxed); that they will soon come in contact with their Government, and command more enlightened commercial laws; and that this meeting has been retarded up to this time only by the prejudice and narrow-mindedness which follow repeated national reverses, and the terrifying calamities of civil strife.

(*To be continded.*)

* M. Sallandrouze de la Mornaix.

MR. CLIVE'S DRAWINGS.—We have been much gratified with a private view of the drawings of this gentleman, in connexion with Nineveh and its excavations, the Great Arabian Desert, Bagdad, and the Nestorian country. These drawings, about 90 in number, may be seen at 114, Bond-street. Their extent, of course, precludes any design on our part of entering into their merits in detail. We must content ourselves with specifying a few particulars, and pointing out their general adherence to the truth of nature. Some of the views, such as those of Pera and the Bosphorus, are indeed very beautiful; and all are recommended by the blended romance and classicality of the scenes. We perceive that Messrs. Dickinson intend to lithograph a selection from these interesting sketches, comprising principally the subjects that lie between the Persian Gulf and the Black Sea.

MILTON RECITATIONS.—The Rev. Charles Eyre, on Thursday week, performed an extraordinary feat of memory, at the Music Hall, Store-street. He recited about a fifth part, *memoriter*, of Milton's "Paradise Lost," comprising the better portions of the early books, including the debate in Pandemonium, the adventures of Satan with Death and Sin, and the temptation of our first parents. We have to complain of the reciter's sometimes corrupting hte the text of the divine poet; but in general, his elocution, though not throughout well sustained, and sometimes savouring of the conventicle in its tone, sufficiently well demonstrated that the great epic contains many dramatic points which are generally overlooked. Still we think that the recital would have been improved in its effect by the poem having been read rather than declaimed. A superfluity of action would have been restrained by the presence of the book, which the absence of it too much encouraged.

ROTTEN-ROW, HYDE-PARK.

ROTTEN-ROW, HYDE-PARK.

HYDE-park, from its "lying high and dry," is, perhaps, the most airy and healthy spot in London. It is an excellent place for walking in, and has a great extent of well-kept paths for pedestrians. Excellent drives, to which only private vehicles are admitted, likewise furnish the means of enjoying carriage exercise; and thus the Park has been fashionable for drives and promenades since the time of Charles II. "It was fenced in with deer fences," says Mr. Cunningham, "from a very early period; was first walled in with brick in the reign of Charles II., and first inclosed with an open iron railing in the reign of George IV. In 1550, the French Ambassador hunted in Hyde-park with the King; in 1578, the Duke Casimir 'killed a barren doe with his piece in Hyde-park from amoungst 300 other deer.' In Charles I.'s reign it became celebrated for its foot and horse races round the ring; in Cromwell's time, for its musters and coach races; in Charles II.'s time, for its drives and promenades, a reputation which it still retains, showing, in the London season, from April to July (between half-past five and half-past six P.M.), all the wealth and fashion, and splendid equipages of nobility of the country."

Nor have the equestrians been forgotten; peculiar accommodation having been provided for them in the roadway, known as Rotten-row, where the fine gravel is always allowed to remain loose, so that horses can gallop over it without the least danger from falling. This famed ride lies on the south side of the Park, and extends from the lodge at Hyde-park Corner to the Kensington-gate; and between Rotten-row and the Serpentine is built the Great Exhibition Palace.

We are not aware of the precise date at which this road was formed; but we find it celebrated in Sheridan's prologue to the play of "Pizarro," first produced in 1798:—

Horsed in Cheapside, scarce yet the gayer spark
Achieves the Sunday triumph of the Park;
Scarce yet you see him, dreading to be late,
Scour the New-road, and dash through Grovesnor-gate:
Anxious—yet timorous too—his steed to show,
The hack Bucephalus of Rotten-row.
Careless he seems, yet vigilantly shy,
Wooes the stray glance of ladies passing by,
While his off-heel, insidiously aside,
Provokes the caper which he seems to chide.

Lord Byron, in describing the break-up of the London season, thus refers to the locality:—

When its quicksilver's down at zero—lo!
Coach, chariot, luggage, baggage, equipage!
Wheels which from Carlton Palace to Soho,
And happiest they who horses can engage;
The turnpikes glow with dust; and Rotten-row
Sleeps from the chivalry of this bright age;
And tradesmen, with long bills, and longer faces.
Sigh as the post-boys fasten on the traces."

"Don Juan," canto xiii., stanza 44.

In May, June, and part of July, between five and seven P.M., Rotten-row is crowded with equestrians and ladies in great numbers, when the scene is very brilliant. It will be recollected that when the site of the Crystal Palace was decided on, it was objected that the frequenters of Rotten-row would be subjected to great inconvenience from the increase of traffic which the Exhibition would bring into the Park. Now that the Palace is built, this inconvenience has not been experienced to any considerable extent; but it has been most unwarrantably taken advantage of "to break up one of the last town encampments of the Dryads, and actually lay open Kensington-gardens for a new ride." This encroachment has very properly taken up by the Marylebone Vestry. At the meeting held on Saturday, Mr. Hume, M.P., stated that "He had inquired what objection there was to the continuation of the drive by the Crystal Palace in Rotten-row, and the only answer was that it was thought the north of the Serpentine would be better. The adoption of Kensington-gardens was an attempt on false pretences. It was no more nor less than a robbery on the rights and recreations of the pedestrian public. (Hear, hear.) In the course of the next two or three months, the metropolis would be visited by tens of thousands of pedestrians from all parts of the kingdom, as well as the Continent, and they were to be deprived of the advantages of this, one of the most beautiful spots in the vicinity of London, merely to gratify a favoured few to gallop and ride about a place, to great danger of the lives of the public. But the question was, whether, in appropriating this drive in Kensington-gardens, the Woods and Forests had not acted illegally. By act of Parliament, Lord Seymour had no right whatever to touch the Royal gardens without the consent of the Treasury; and, if so, the noble Lord and his colleagues must be made responsible. He (Mr. Hume) the other night presented to the House of Commons a large petition from Paddington, signed in three or four hours; and, although he only asked Lord Seymour for forty-eight hours' delay, he was refused. He thought in this matter the Woods and Forests had behaved exceedingly ill; and they might depend upon it he (Mr. Hume) would not fail to press the matter with all the power of which he was capable." (Hear.)

Sir Peter Laurie said this ride in Kensington-gardens had no right to have been opened until a vote of the House had been taken. He wanted to know at whose instigation it was opened. There was no man who rode more in Rotten-row than he did; and he had no hesitation in declaring that there was ample room there without this encroachment.

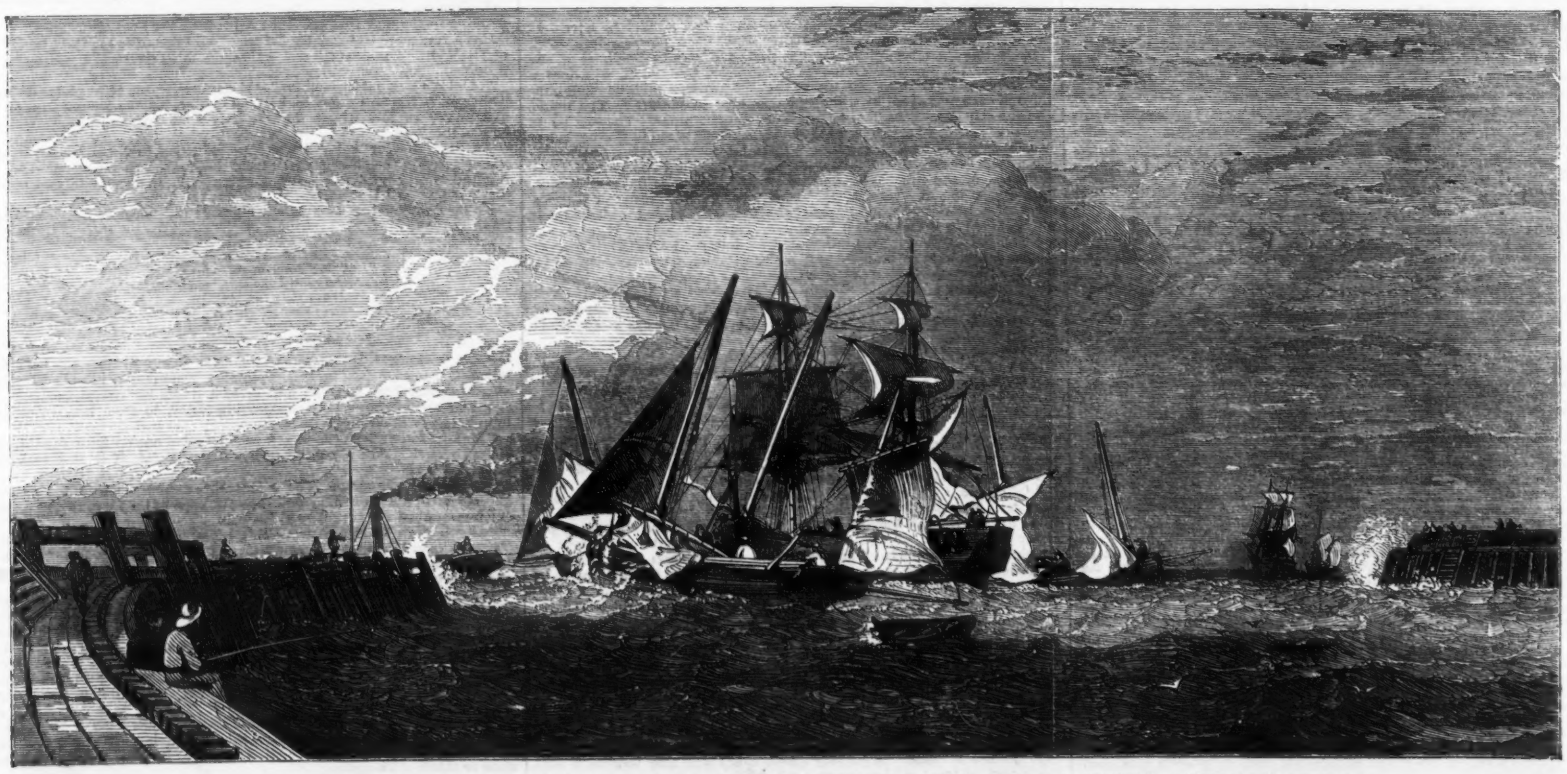
EXHIBITION OF THE ROYAL ACADEMY.—"THE RETURN OF THE DOVE TO THE ARK."—PAINTED BY J. E. MILLAIS.

ROYAL ACADEMY EXHIBITION.

(THIRD NOTICE)

STEPPING southward and westward as well, we come to "A Poet's Study" (443), by Redgrave—a deep glen overhung with trees, in which Coleridge and Wordsworth and Southey are said to have sat for hours and gathered inspiration. Mr. Redgrave has wisely refrained from introducing even one of the poets into the scene, as it will be remembered Edwin Landseer signally failed in introducing Sir Walter Scott into the Rhymer's Glen. In what he has attempted, Mr. Redgrave has succeeded. His trees, however, might have a broader touch without losing aught of the truth to nature. The freshness of this picture is indeed admirable—sufficient of itself to inspire a poet.

Beneath Cardinal Wiseman's portrait is hung David Roberts's large picture, "Surprise of the Caravan," a scene in Syria (464), a well-told story; the picture being full of varied incident, and the character of the country given with a most faithful pencil. Further on is a clever scene, "Dover Hovellers," by Mr. Hollins; and immediately above is the subscription portrait of Dr. Conolly, by Sir John Watson Gordon—a most capital likeness, capitally painted. Still more to the right is "Hotspur and the Fop" (487) by Mr. Elmore: a well rendered scene from Shakspeare. The *Fop*, full of civet and disgust at the dead body crossing the wind and his nobility, and *Hotspur* all manly contempt at the perfumed fellow. Near to this clever picture is a Pre-Raphaelite folly, by Charles Collins, son of English-coast Collins; and anything, as a whole, further from nature and his father's works, it would be difficult to produce. He calls it "Convent Thoughts," and gives us a nun in a landscape of green, meditating on the works of nature, on flowers and green leaves—painted with a micro



EXHIBITION OF THE SOCIETY OF PAINTERS IN WATER-COLOURS.—"VESSELS LEAVING THE HARBOUR OF GREAT YARMOUTH."—PAINTED BY E. DUNCAN.

scopic minuteness perfectly wonderful. But what misapplication of time. The man who wrote the Lord's prayer on a silver penny of Maunday money was just as well employed. The same application and skill, better directed, would make Mr. Collins a clever artist, not, as he is now, only an eccentric one.

Quitting Mr. Collins in an angry mood, we come to Mr. Sydney Cooper's largest contribution, "The Evening Drink"—a tranquil scene of Canterbury and Cuyp-like nature, which no English artist has caught with so much felicity as Mr. Cooper. It is true that he sometimes wearies us with his monotonous repetitions of cows in the same attitude, by the same stream, and in the very same sunshine; so much so, indeed, that we long, not unfrequently, for the introduction of a jackass, or a tinker's hovel, or a gypsy camp. Why will he always give us the same tune upon canvass? We admit, willingly admit, the merit, simplicity, and beauty of his subjects and his scenery, but surely we have too much of it. Mr. Cooper will, no doubt, answer that his patrons have not; that he is asked, bothered, and teazed for pictures of this class; that he tries to please, and must please to live; that he cannot afford to offend; and that, when he is rich and less teazed for cows and Cuyp-like distances, he will give us other scenes in nature (as we have no doubt he will) equally true and equally beautiful. Let Mr. Cooper take a hint from the charming little "Gleaner" (502), hanging by the side of his picture, the joint composition of Frith and Creswick. The figure is too prosaic for either a Ruth or a Lavinia, but is pastoral and autumnal-looking.

Here we turn into the West Room, and would make the best of our way out were we not willingly detained before "The Return of the Dove to the Ark," by Mr. Millais. In this picture there is very little story. Mr. Millais has painted a sentiment, and conveyed that sentiment after his own fashion—touchingly, if not truly. Our readers can see the sentiment conveyed: we wish they could see the colour—such robes of green and purple and white—so much to admire, and so much to be offended with. His other pictures (he has three in all) are in the same style. 561 is a scene from Tennyson:

She only said, "My life is dreary;"

and while the sentiment is attained, it is conveyed extravagantly in the church-window-like fashion of the thirteenth century. 799, "The Woodman's Daughter," is from Mr. Coventry Patmore's poems, and represents a boy, in an outrageous red dress, offering some very red strawberries to a very purpley girl, in a very green landscape. Yet there is merit in this picture, for the expression on the girl's face, of surprise, satisfaction, and delight, is given with no common perception of character. Mr. Millais is young enough to mend, and has talent to do better things.

We now rturn to the East Room. Passing two or three attentive gazers admiring more than we do Mr. Cope's "Sisters," we come to Ward's "Marie Antoinette" (already noticed), to Stanfield's large picture (facing the Maclise) of the "Battle of Roveredo," more picturesque than poetic, though a wonderful picture; and Frith's very clever representation of "Hogarth brought before the Governor of Calais as a Spy." Mr. Frith found his subject in the "Letters of Walpole:"—"Hogarth has run a great risk since the peace. He went to France, accompanied by some friends, and was so imprudent as to be taking a sketch of the drawbridge at Calais. He was seized and carried to the Governor, where he was obliged to prove his vocation by producing several *caricatures*, &c., such as would by no means serve the purpose of an engineer. He was told by the Governor, that, had not the peace been actually signed, he should have hung him immediately on the ramparts."

Critics are found who regret that Mr. Frith has so few female figures in this picture, Mr. Frith excelling in the representation of female loveliness. But he has a contrast in this picture quite equal to the contrast between manly strength and womanly delicacy. "Hogarth and his friend Pine" are magnificent specimens of English bull-dog nature, contrasting strongly with French slenderness of figure, and differences of face and costume.

Pleased with what we have seen, we now walk into the centre of the Great Room. Here is Lord Brougham at full length, by Pickersgill; Wordsworth at full length, also by the same artist, but very unpoetic; a portrait of Barry, the architect, by Knight; a portrait of John Henry Robinson, one of the best of our living line engravers, also by Knight, and not very like—altogether too large; a delicately drawn full length of the Duchess of Manchester, by L. W. Desanges; a good portrait of F. A. Lee, the landscape-painter, by Hollins; and other works, to which we shall return on an early occasion.

Here we must conclude for the present.

EXHIBITION OF THE SOCIETY OF PAINTERS IN WATER-COLOURS.

"Vessels leaving the Harbour of Great Yarmouth." Painted by E. Duncan.

This picture, like every production of Mr. Duncan's pencil, is a scene of truthful nature. The busy waves dashing their white foam against the pier-head, the sails of the vessels filling with fair wind, and the bright light gleaming upon their faces, form a very life-like scene, which is admirably painted throughout.

UTAH AND THE MORMONS.

(From the *Saint Louis Daily Journal.*)

We find in the *Washington National Era* a most interesting correspondence from the Great Salt Lake City, in the territory of Utah, the settlement of the Mormons. We will give our readers a summary of the most interesting facts. The writer sets out by giving a description; and says that the term *desert* may be appropriately applied to all the country included in the great interior basin, and all lying between the great basin and the Missouri and Arkansas rivers, embracing nearly all of our recent purchase from Mexico, and much of our former territory. There is here and there a fertile valley, which is an exception. Perhaps of all this vast country one twentieth part is arable land. The largest tract of fertile land lies just within the eastern rim of the great basin, Nobsatch mountains, and the Utah and the Great Salt Lakes. This is about 200 miles long, and varies from five to 40 miles in breadth; but even in this valley there is much barren land, and much that requires artificial irrigation.

Beside this Great Valley, there are several small valleys and oases in the Great Basin, but they are mostly so small, so far apart, and so badly timbered, that they will never be settled while there is any unoccupied land in the valley of the Mississippi. It is even doubted if the Great Salt Lake Valley would have become settled for many years to come, had not persecution driven the Mormons to seek refuge and a home within its distant limits. Thus, like the persecution that drove the English Puritans to settle in New England, this Mormon persecution promises to result in a great good. The present population of Deseret is estimated at 20,000, but the emigration of the present year, it is expected, will swell the amount to 40,000. Last year they adopted a constitution, admirably consistent with the constitution of the United States, and as thoroughly republican as the constitution of any state in the Union. They have not legislated on the subject of slavery, but they express their conviction that slavery can have no legal existence where it has never been recognised. Brigham Young is their Governor, President of the Church, High Priest, Revelator, &c. They are devotedly attached to the American Union, and say that it has the best government the world has ever produced or ever will produce until Christ shall come and reign over the earth.

The Mormons live harmoniously together, are industrious and frugal, and are described as very hospitable. It is but three years since they settled in the valley of the Great Salt Lake, and in that time they have opened good farms, built houses and barns, erected mills of various kinds, made bridges across the river, built school-houses and established schools, built a State House, chartered a University, and, in fact, they have done more to advance the real prosperity of a State, than some of the original thirteen. They have raised funds to assist their brethren in Europe to emigrate. Last year they sent out 6000 dollars, and this year their subscriptions amount to 500,000 dollars. Their chief crop is wheat, for which both climate and soil are well adapted. Fifty bushels per acre is about an average crop. Corn is an unproductive crop with them; other grains generally produce very well. Stock of all kinds do well. Sheep in large numbers have been introduced, and the building of a woollen manufactory is contemplated. The letter, which is dated Sept. 2nd, 1850, states that the Mormons manufacture powder, and that they have been compelled to use it. The Snake and Utah tribes of Indians have combined in making attacks and committing depredations upon the whites, and even dare them to resist. A postscript dated Sept. 24, states that on the night of the 21st, the Indians made an attack upon the North settlement, but the command under Gen. Eldridge caused them to retreat hastily. In the pursuit a Snake chief was killed.

The Mormons who went a gold hunting have been generally successful. They gathered their gold on the eastern side of the Sierra Nevada. The return of the adventurers with "piles" created great excitement among the newly arrived emigrants. The price of labour varies from one dollar up to ten. In their trade they adopt Free-trade principles, except in the matter of intoxicating liquors: a duty or fine of one hundred per cent. *ad valorem* is imposed upon liquors introduced into the territory. Mr. Asa A. Call, who writes the letter, after remarking that boarding is from four to eight dollars per week, flour twenty dollars per barrel, and other provisions in proportion, observes—

"The settlements feel the want of nothing so much as a railroad, connecting with the Mississippi and the Pacific. Such a road would be a giant undertaking, as we all know; but it could be made, and it would pay well; and any road that will pay ought to be built."

Coal has been found in four different places to the west of the Missouri line. Lead or galena has also been found between the Kumas and Platte rivers. Gold deposits exist in several places; and the Sweet-water mountains contain the best marble in the world, and of all colours, from the purest white to the blackest jet.

"This whole region of country possesses one singular feature that is not generally known, or at least it is not generally known that the phenomenon is so common. From the mouth of the Platte to the Sierra Nevada mountains, a large portion of all the moist land is in dry weather covered with salt. Below Fort Laramie, it is generally a pure chloride of sodium, and appears only in small quantities, frequently resembling a heavy hoar-frost. It disappears with every rain, but is held in solution by the water in the earth, till brought to the surface by capillary attraction, and deposited by evaporation in fine white crystals. Above Fort Laramie, especially north of the Platte, it was found in large quantities, and usually mingled with other substances, the carbonate of sodium frequently predominating over the chloride. There is a small lake or pond, near the Sweet-water, around the margin of which this salt is deposited to the depth of several inches. There are several springs around this lake. It may be smelt for several miles. This is called the Alkali Lake.

The most curious animal on the plains is the "horned frog," or "round lizard," or "air frog," as some call it.

The valley of the Great Lake is described as peculiarly healthy; agues and bilious fevers are entirely unknown, and the boys and girls look as fair and fresh as the flowers in May.

The plains abound with the buffalo, elk, deer, and antelope, and the bear and gillo, or wild sheep, are found in all parts of the mountains. But next year's emigration will have but few difficulties to encounter, as the roads will be better, ferries and bridges will be established at all the bad crossings, and there are now trading posts established along the whole road, at which supplies of all kinds may be procured.

Mr. Call expresses his belief that the cause of the large number of deaths among the emigrants has not arisen from the unhealthiness of the climate, but from fear and over doctoring. But a great change is about to be made in the Great Desert. A company of men have established themselves upon the Salmon Trout river, for the purpose of turning its waters over the fifty mile Desert, so that its water, instead of falling into Pyramid Lake, will fall into Humboldt or Mary River, the bed of which is 200 feet lower than the former. This will require but little labour, as nature aids the design; so that by this spring there will be a continuous line of water from the Humboldt Mountains to the Sierra Nevada.

Within three years the wonders of California have astonished the world; but while the fame and wealth of California have drawn to her people from all nations on the face of the earth, a small persecuted sect, within the same time, have laid the foundation of a mighty State in the deep recesses of our vast wilderness territory, and by their industry and enterprising spirit are destined to turn that desert into fruitful fields. By their art and civilisation they will collect together the civilisation of the east and west of this great continent, and open up a highway of communication for both. Deseret will stand on the pages of history, linked with the history of California, and the record of its rise and progress will be regarded as no less marvellous and unprecedented.

TOWN TALK AND TABLE TALK.

That the age of the Howards—or, more strictly speaking, of John Howard, the prison visitor—is not altogether gone; that there is still sterling unaffected philanthropy in the world, notwithstanding the bad name which the poor world now-a-days gets—have been proved by the diary of a voyage in an American emigrant ship, lately published by Mr. Vere Foster. This gentleman, a man of fortune and family, appears endowed with those kindly feelings and purely benevolent wishes towards the poor and the labouring, which have of late so signally characterised many of the upper classes of society. Mr. Foster's tenderness for those beneath him did not however evaporate in Young England poetry or mediæval aspiration; or even with the foundation of a cricket club. Neither was it satisfied with blazing in the contribution list to fashionable or unfashionable charities; nor by the performance of any of those little good offices which avail the receiver much, and cost the giver little. Mr. Vere Foster took much interest in the American emigration, and, in order to find out how steerage passengers across the Atlantic were actually treated, he himself assumed the character, performed the voyage, made the third stowed into a cramped sleeping berth, lived upon the ship's provisions; and daily, with a pair of scales, weighed and measured the deficiencies in the food paid for, and stipulated to be supplied by the calculating Yankee shipowners and their ruffian crew. The pork served out was short by 3 2-7ths lb.; the flour by 2-7ths lb.; the oatmeal by 15¼ lb.; the rice by 4¼ lb.; the biscuits by 7¼ lb.; the tea by 6½ oz.; the sugar by 13 oz.; molasses by 2 lb. 3½ oz. A tolerable saving this, when the value of these articles is multiplied by some hundreds of persons. No wonder that American emigrant ships bring in good dividends. But the swindling was not the worst part of the business: Mr. Foster's diary is a long register of the basest ruffianisms perpetrated upon the unlucky passengers, by the mates and crew. An application for redress has been made, but the English authorities cannot interfere with what passes on the high seas under the magnanimous "stars and stripes," so that the "middle passage" as applied to a white cargo between Liverpool and New York, is likely to proceed in all its horrors, and the "smart" Wall-street merchants to realise very excellent profits.

Picture-dealing is a craft which has not the best possible name in the world. There is generally understood to be about as much jockeying about painted canvass as about horseflesh, and as many tricks played upon would-be connoisseurs of Raphaels and Claudes as upon *soi-distant* and *soi-pensant* judges of blood, bone, and symmetry. A calculation of the number of acres of alleged Rubenses, Canalettis, Vandykes, and Titians displayed in the private dwellings and public auction-rooms of this realm, would be an edifying piece of arithmetic. Notable stories sometimes go the round of studios in every part of the artistic world—from Rome to Camden-town—in which *chef d'œuvres* by the old masters are manufactured by wholesale, from which "Holy Families" by the score, and "Madonnas" by the hundred, square furlongs of *rénaissance* landscape and Louis Quinze pastorals, are weekly and monthly poured upon the market to adorn as undoubted originals the yet moist walls of wealthy parvenueism. Pictures of this class, too, play a strange part in a certain province of our business and monetary system. The sharp-eyed gentleman, who does a bill at 100 or so per cent., stipulates that the advance shall be made one-third in cash, one-third in wine, and one-third in pictures. The liquid and the canvass are, of course, pretty much upon a par. The south-side Madeira has been brewed in a City cellar, and the glowing Correggio has been knocked up in a Soho garret. Picture-dealers, however, I rejoice to say, are not all such drivers of desperately hard bargains. The chapmen of the old masters have now and then bowels of liberality, and inspirations of magnanimity. It is wonderful to have to connect a story of a *soi-disant* ancient master with a commercial philanthropy unparalleled in the records of commerce, from the days of Tyre downwards; but so it is. A gentleman was lately passing that strange transpontine bazaar of odds and ends, eatable, drinkable, wearable, useful, and ornamental—the New Cut—when he observed in a broker's window a rusty old daub, looking as if it had been painted in mud and coffee-grounds, and marked "An undoubted specimen of Canaletti." The man of pictures was standing at his door, with his eye keenly fixed on the astonished gazer.

"You say this is an undoubted Canaletti?"

"Warrant it Canaletti, sir. No doubt about that, I should say."

"What do you ask for it?"

A pause, and then a doubting, hesitating reply.

"Fifty shillings wouldn't be out of the way? Say fifty, and it's yours."

"But don't you know, my good man, that if that picture be what you say, it is worth more guineas than you have mentioned shillings."

The reply was the very sublime of impudence.

"Of course, I know that; I could get the money any day, but I don't want to. My maxim is live and let live."

An item in the last budget of transatlantic intelligence must be of peculiar interest to a particular class of society resident in the State to which the news refers. The legislature of Michigan, we hear, has abolished all laws for the recovery of debts. Here is the true reign of Saturn come again upon the earth. "Base is the slave who pays!" Debtors will wax jubilant, and their victims establish a begging-box, marked "Pray, remember the poor creditors." Never has such a state of Society existed since Pan piped and the Fauns danced. No duns, no lawyers' letters, no writs, no bailiffs, no sponging-houses, no prisons. Henceforth, all a man will have to do is to accept a bill and pocket the cash. As poor Sheridan (he would have approved highly of Michigan legislation) used to say, after setting his name across a half-crown stamp, "Well, thank Heaven, that's off my mind." Michigan will henceforth offer a splendid field for emigration to the gentlemen who are hampered by our inconvenient, insolvent, and bankrupt systems at home. A country where every one may become a borrower and no one need be a payer; where there is no constable for fast gentlemen to outrun, and where in the words of the immortal song—

If you spend what you have, why you save what you owe;

such a land is the true El Dorado—the moral California—the monetary Happy Valley! Westward, then, for happy Michigan! All the tribe of the Diddlers and the Montague Tigs, pack up your brick and rag-stuffed portmanteaus; assume your most sounding and aristocratic *aliases*; strike up the "Rogue's march;" drink "Success to swindling;" and ho! for happy, debtless Michigan!

A. B. R.

A STORY OF THE PRESENT DAY.

BY AUGUSTUS MAYHEW,

ONE OF THE AUTHORS OF "THE GREATEST PLAGUE OF LIFE," "HOW TO GET MARRIED," ETC.

(*Continued from page* 320.)

CHAPTER VIII.

THE LUXURY OF LABOUR—"THE CHEAPEST WOYAGE AS EVER WAS MADE."

The wind, which for the last month had been playing about between north and east, never changing, despite the constant whistling of upwards of five thousand full-cheeked Dock labourers, at last shifted round to the west. Many a poor fellow who had gone home over night hungry and depressed, now looked cheerful and contented, for he would that day be sure of getting some work to do. The weathercocks of London were due west—golden arrows, painted foxes, zinc sportsmen, all of them that were not too rusty and weather-beaten to tell the joyful news, were pointing to the bread-giving quarter. Vessels that had long been weather-bound would now spread their sails, and hurry up the Channel, to give work to Tim Bradley and his companions.

It was a little fierce-looking sailor, that, with two drawn swords, kept guard on the top of an elder-tree, near the Blackwall Railway, who had first told Tim that a change for the better had taken place. Every morning, for the last week, Bradley would look up at him with an anxious and heavy heart, hoping and fearing at the same time; and each morning the little sailor, though no doubt anxious to oblige a mate in distress, had clung to the dreaded East. Occasionally, as if to furnish a little encouraging variety, he might trespass a bit on Nor Nor by East, or treat the weaver to East East by Nor, but nothing further. But now he was chopping away, cutting at the West wind with both swords, as furiously as if he were engaging the five Frenchmen every British tar is supposed to be worth. Off bounded Tim, as soon as he saw it, running as fast as his slippers would carry him, in the hopes of being the first to tell the news at the gates. When he got there, it was fortunately already known, for he was too much out of breath to speak a word. That day the bribes usually held out to the foreman decreased in value wonderfully. The men seemed to know they would be wanted, and pushed and promised less—their terms of unbounded affection alone keeping a steady hold on the market.

For the first time, Tim formed one of a gang. At last, he was to receive the half-crown that had been haunting his dreams and wasting his days, till it had almost driven him to despair. Now the bill at the baker's should be paid, the clothes redeemed, the stomach filled, and that noble girl, whose hands had never ceased, made to rest a little from her work. *His* turn of labour had now come; *he* would provide the food and the house-room, and tire his limbs, and prove his gratitude by pouring into the lap of his protectress his hard-earned gains.

His heart throbbed with pleasure as he hurried to his post; and he felt, as he stared at the wonders around him, almost as if he were holiday-making. What unbounded wealth, what an excess of plenty covered the ground! Who was to use it? where did it go? Look at those stacks of cork—big as hay-stacks: what physic, wine, or spirit-bottles could ever use them up? Look at those piles of curling horns and festering skins, enough to last Sheffield and Nottingham as long as knives and boots continued to be made! To think that he should have put aside his pipe as a useless extravagance, when on all sides there was tobacco rotting and spoiling, made useless by its very quantity. Now the air smelt like a perfumer's shop, with the spices and rich gums, till he felt hungry as he breathed it. Now he was in an atmosphere reeking with the fumes of wine, making him think of the sick father, till he longed to beg a cupfull to strengthen him with. He would stare with wonder on the countless casks, stained red with treasure that had leaked out, inducing those who were nearest to see if they were really full.

On every side were vaults and stores, with their doors wide open to receive more wealth. He would stand for a moment to watch the men as they rolled puncheon after puncheon into those hungry mouths, and follow them with his eyes till they were swallowed up in the pitchy darkness. Then he would try to pierce the black gloom, counting the little twinkling lamps, that watched like sentinels over the wealth—the space between them growing less and less, until they ended in one long streak of light.

Oh! it was wonderful! Such bustle! such noise and confusion! It put new blood in the veins to look at it. What numberless vessels! What a forest of masts, with ropes hanging about them, crossing each other, till Tim wondered how the sailors would disentangle them. Some of the ships had their sails drying and bleaching in the sun. How white they looked against the blue sky! and, as the wind blew them about, they seemed like the wings of some huge bird, flapping impatiently to be off to the sea again. How suddenly the big heavy bales, too, would shoot out of the holds, swinging to and fro in the air as if struggling to snap the chain that held them. With the sailors singing, and the bells clinking the hours, and the strange dresses and complexions of the men he met, it was like a fairy scene; and, instead of being paid to work there, it was almost—so he thought—worth half-a-crown to be allowed to form one of the workmen.

He could scarcely help laughing when he saw the post assigned to him. In a huge drum were nailed several long stout battens, on which he and his companions, holding on by a rope, had to tread, turning the monster cylinder round and round, after the principle of a squirrel in its cage, so winding in the rope that lifted the bales from the hold of the ship.

"It's very good training for Brixton," said one of the fellows, laughing at Tim's look of wonder; "and makes a flick as active as a white mouse, it do."

"Ah! it's summut like our lot," said another, trying to be philosophical; "always a trying to get higher and higher, but the ground slips away and leaves us just where we was, only a bit more tired than when we begun, that's all."

At first Bradley enjoyed the sport so much, that, breaking from the steady tread of the other men, he went desperately to work, stamping as fast and as heavily as he could; but a heavy thump on his shin soon cooled him down.

As they worked the men sang a kind of rude chorus, beating time with their feet:—

I wish I was in Inger,
A-eatin' potted ginger;
Where the wimmin is japan'd,
And brown suggar 'stead of sand;
All day ridin' on niggars,
Never smokin' only cigars;
With rum runnin' in rivers,
And rich coves without livers.

After working for an hour or two, Tim began to find out that the labour was harder than he had expected. The muscles of his legs ached as if they had been beaten; and several times his companions had to shout out to him, in no very encouraging terms, to force him to contribute his share of strength.

"Make a fust-rate footman, you would," cried one; "hate running up stairs so much. Just another ha'porth o' pushabout, if it aint troublin' yer too much."

There was no flagging. The batten threatened the shin too cruelly and surely to allow of that; and the only hope of help was in the sinews getting numbed and senseless to the pain.

"It's to-morrow mornin' as you'll feel it—punish you worse nor skating. Yer legs 'll be like a pair o' compasses: but wait a bit; never despair, and in less than no time they'll be as full o' spring as a clasp-knife—go click every time yer opens 'em."

It seemed as if twelve o'clock would never come, The dinner-hour's respite would set him up again, for the pain was growing intolerable. The bones of his legs seemed to bend at each push he gave. How anxiously he listened to the ship-bells sounding the hours, making his companions shout, by asking, each time he heard them, what o'clock they meant. The men, with a kind of mirth peculiar to the lowest members of society, seemed to find as much pleasure in their companion's sufferings as if they had been looking on at a cock-fight, or a rat match, or any other good old English sport. As if to try his courage, they increased the speed of their pace; but their waggery had the good effect of putting Tim's spirit up, and, in his rage, he had less time to think of his agony.

At length the great work-bell rang, and with its first clang the men jumped from their post, and commenced putting on their coats. Some of them, taking up the handkerchief with the saucer bulging out of the bottom of it, set to work eating vigorously, so as to have the longer nap afterwards. But the greater portion of the crew had to wait for the

refreshment man, who came round regularly with his cans and basket Very few of the poor fellows were ever in sufficient funds to practise the economy of bringing their dinner with them, and Tim was amongst the number. The refreshment-man was a rare fellow for credit, and the empty pocket could mortgage the coming half-crown as deeply as it pleased.

When the white apron and fur cap of the man were in sight, every one ran to meet him. The beer-can was soon emptied, and the basket narrowly examined.

"Now then, just leave them loaves alone, Bill," cried the provision merchant; "a-squeezin' 'em up as if they was putty! This makes one-and-three, Joe," he added, handing one a huge slice of bread and cheese. "Who's for the real lux'ry and hot polonies? Don't give that Strutten any more beer—he'll be drunk—that's the sixth pint. Come on, lads. No doing the constrictor dodge, and eating once a month. No, I haven't got no mutton-pies: since these here Ostend rabbits come up, there's no getting a cat for love or money."

"What's the polonies—beef or mutton?" asked a huge fellow, in a fashionable dress coat and red plush breeches, as if he had been a footman.

"You're a-gettin' delicate," answered the refreshment-man indignantly. "Cookey spoilt you in your last place, a-givin' yer the cold chicken as com'd down from the parlour. Come, no grabbin', you fellers; who's to keep count? I shall go cheatin' you. Mind, Bob, you've near eat up your wages, and you'll be askin' for beer by-and-by."

"Can't help it," returned the man, who, with his mouth yet full, seized upon a fresh supply. Without speaking a word, he had been eating as hard as he could, with his eyes fixed on the basket as if afraid that it would be emptied before he was satisfied. "I'll have a fill for once; it aint often as I has to undo my waistkit after meals."

Many of the men growing extravagant, at finding the credit so easy, ate and ate, until the day's pay was due. Perhaps, for a month or so, they had been living on bread and water, and the very sight of the delicacies in the basket drove away all prudence, their hunger increasing, rather than decreasing, with each mouthful. How the proprietor managed to recollect his debts, was surprising; and, indeed, he must have lost, had it not always been his plan to tax his customers, when pay-time arrived, with so large an amount, that they were glad to escape by telling the sum they really owed. For when at four o'clock the day's labour ceased, and the men hurried to the pay-office, the refreshment-merchant, with a small apron, all pockets, like a turnpikeman's, tied round his waist, and bulging out with coppers and small silver-pieces, stationed himself near the gate: and, as each labourer passed by, would take his debt out of the half-crown. It was curious to see the melancholy look of those whose starving gluttony had made them as poor on leaving work as when they began it.

As the ships kept pouring in each day, the work at the Docks was brisk and certain. For two weeks Tim had been earning his thirty pence daily, living, too, as prudently as he could, so that he had kept his word, and Kitty's tea-cup had many a silver shilling in it. He could now work against the best man in the place, for his legs had grown used to the exercise through constant practice.

So as to avoid temptation, the weaver, each day when the refreshment-man came round, would walk away, and amuse himself as he eat his food by looking at the shipping. But the vessel that centred the whole of his thoughts, and near which he would linger, like a boy at a stable-yard, was one that was shortly to start for Australia. Tim would watch and peep into each packet that went on board as curiously as a wife does into her husband's letters when they are in a lady's hand-writing. Sometimes the red handles of a plough would be sticking out of the brown matting that packed it, or the bright ends of spades and hoes glitter through their coarse canvass covering. All these were bound to the land he had set his hopes upon, and how he envied them their journey! As he never missed visiting this vessel, the sailors began at last to know him, and talk with him. Then he would question and cross-question them as an Old Bailey barrister does a witness—only a little more genteelly.

"Why, only think," said one, who was his especial companion, "you may get a leg of the primest mutton for sixpence. It's so cheap, they boils down the sheep for taller. That's summut like, aint it?"

"And wages?" asked Tim.

"Well, sixty pounds is often given up the Bush, or even seventy; and wimmin, about twenty-five and their rations. Besides, they is more like one of the family, like; they's all lonely up the country. Why, a small wench can get seven bob a week for minding little 'uns."

"And farm labourers?"

"They's down a little, as the emigrants pours in. A man a year back used to keep a nag, and gallop from farm to farm. They'd ask fifteen bob an acre for corn; and if the master wouldn't give it, off they'd gallop, and he'd have to give it arter all."

"Nonsense!" cried the astonished weaver.

"Ay, he would, though," continued the man. "Why, bless you, a feller as is a good shot may make a fortin. Turkeys, parrots, ducks, a-flying about like sparrows here. Knock down your ducks, and get twenty shillings a pair for 'em at Wellington."

Tim's eyes opened wider and wider. "And the natives is cannibals, aint they?" he added, with a look of fear.

The sailor burst out laughing: "No! not half as much as some of 'em here. Don't eat a man up half as quick. Bless you, they're as quiet as crows, and flies off a'most as quick if they smells powder. Cannibals! Ha! ha! ha!"

Bradley felt considerably relieved. His notion of an Australian chief's larder was truly fearful—with men hanging up on hooks by the legs, like hares; and, perhaps, the old and tough victims salted down for the servants; or a plump baby or two trussed and powdered like a turkey for grand occasions!

Such talk as this nearly maddened the poor fellow. It was like a hungry beggar looking in at a cook-shop window, sharpening his appetite to no purpose. Tim would work silently; so intent in thought, that his roguish companions could play all sorts of tricks on him—take pence out of his coat-pocket as easily as possible. In two days the vessel was to start: he would see it leave with its sails stretched out—the decks filled with hopeful, cheerful faces—to leave him, sick at heart, to starve on at home. What could he do? Twenty pounds! it might as well be a thousand!

Kitty couldn't imagine what was the matter with Tim. Did he work too hard? He should eat more, and take some beer to strengthen him. She was filled with anxiety on his account, and tried a thousand plans to cheer him up. She used to burnish up the children against the father's arrival, with a zeal that made their cheeks burn again: and she bought a penny book of riddles to pass the evening; and they would sit in a circle round old Lamere guessing at each conundrum, and laughing at the old man, who was the worst hand of the whole lot. But it was useless, the vessel was to start the next day, and there was no rousing him.

Tim Bradley, to tell the truth, was hard at work studying and perfecting a plan which had within the last few hours forced itself into his brain. He had heard of men as hard pushed as himself gaining their point by concealing themselves in the hold of the ship till she was fairly at sea. Why shouldn't he do so? At mid-day the ship's deck was deserted: he might do it easily enough. But to leave all that he cared for, that was the pang. His children, Kitty, the old man, how bitterly they would reproach him! Still, with seventy, sixty, or even fifty pounds a year, a few months would see them by his side, in the midst of plenty. Ducks twenty shillings a pair! A leg of mutton for sixpence! It was a hard struggle.

In the morning Tim called upon Joe, the pigeon-fancier.

"Haven't you got some of them carrying sort?" he asked.

"As nice a pair as ever opened a wing," was the answer.

"I'm a-going a walk: shall I take one on 'em and fly him—just for a lark?"

Joe had no objection, and, giving the proper direction, handed over the bird.

At twelve o'clock the weaver hurried to the nearest baker's, and bought himself a dozen hard ship's biscuits. At the nearest pump he filled four bladders he had brought with him, and, tying them to his handkerchief, fastened them round his waist; then, running back again to the Dock, he went to survey the vessel. All was bustle. The ground round about was covered with packages and luggage. Gun-cases, coops of hens, bright pots and pans, rabbit-hutches, trusses of hay closely packed, and bound with iron hooping—everything indicated a long journey. At six o'clock the anchor was to be weighed—in a few hours the vessel would be tossing on the sea. If he had had any compunctions of conscience before, the bustle and excitement of the scene now decided him. Yes, he would go! What were a few months' suffering to years of prosperity to come? Say what they would, he would go!

The deck was crowded with passengers: some seated on their trunks, with their eyes turned sorrowfully towards the city, as if looking for the friends they were about to leave for ever; others, their faces beaming with hope, longing to reach the promised land. Whilst amongst them walked the sailors, watching everything with a calmness and indifference that seemed strange to the scene.

Tim's blood was boiling within him; instead of finding the deck deserted, it was crowded with life. Was there no chance? A half-hour would decide his fate.

He went on board to watch his opportunity, his excuse being that he wished to see his old friend the sailor. The clock was stealing slowly on—he would wait till the last minute, and then, risking detection, leap suddenly into the hold.

Chance at last favoured him. A vessel outward bound was leaving the dock, and as she passed the *Good Friend*, her rigging became entangled. Instantly every one was in motion, the sailors clambering all aloft, and the passengers crowding to the side. All eyes were busily employed. Not a moment was to be lost. Clinging to the sides of the hold he swung for a moment in the air, and then dropped himself upon the packages beneath. It was not far to fall, and yet the noise he made was so great, that, creeping behind a large cask, he listened breathlessly to hear if it had been noticed. But no one came, and clambering over bales and boxes till he had reached the darkest corner, the man crept into a small opening, and, crouching down, awaited the sailing of the vessel.

The clock struck twelve, and the work began again. Tim from his hiding-place watched the cargo as it was lowered down to the men who received it below. He scarcely dared to breathe, for fear they should hear him. The goods were lowered so unceasingly, that he could not help blessing the strange ship for the aid it had afforded him. Throughout the remainder of the day not another chance occurred, and it would have been madness to have made the attempt whilst the sailors continued in the hold.

Once the men came so near, that he could have touched them; and they pushed the bales so closely together, that his shoulders were pressed back so that he bit his lip with pain; but he never stirred.

Before the clock had struck four all the goods had been stowed away, and the sailors mounted on deck again. As the last man left the ladder, a pigeon whizzed by him.

"See that, Bill!" he cried. "Who the deuce has been shoving pigeons down here?"

"Never mind, it's only one less for the colonies," answered the man. "I suppose the cage has been and got broke. Come on;" and in a few moments Tim was in darkness.

Now he was safe. Hurrah for Australia! Sixty pounds a year!

How he listened to every sound. What bustle there was overhead! He could hear the men running about, and shouting louder and louder as the time for starting drew near. At last he thought he could catch the squeak of a fiddle, and at one end of his prison there was a grating noise as of a heavy chain being drawn up, and the footsteps above moved faster and faster. Were they never going to start? Suppose they had altered the hour for departure, and Kitty should come to hunt for him! All would be lost. He would have given his first year's wages to know whether they were moving—his dread of discovery was such. At length he heard the voice of some one shouting as if through a trumpet, and the sides of the vessel rubbed and creaked as if against some stone pier. Yes, they were off at last, safe and sound; and every minute was lessening the distance to Australia.

He could not sleep that night—his thoughts were at home with the old man and his daughter. They would be waiting for him, wondering at his absence, fearing for his safety, whilst he had left them in their struggling. But Heaven knew he had done it all to serve them; and when a few months had passed, they would bless him for it.

Presently his fancy took another form. Suppose a storm should arise, and the vessel be wrecked, what would become of him? Shout and scream as he would, no one would hear him there. The water would rush in upon him the very first. Or if, in the tossing and pitching of the vessel, he should be crushed or smothered under the huge casks around. There to lie and groan in the agony of a broken limb, with no one to comfort or attend him—it would be fearful. And even if he recovered, to land in his new country as a cripple, to be looked upon as a burden, where stout limbs and sturdy sinews alone were wanted!

To shake off the thoughts, he rose, determined on exploring the hold. His eyes were growing accustomed to the darkness, and he could nearly distinguish one black object from another. So he groped his way about till he reached one of the ends where the sides grew so narrow that he could touch them both. How his heart beat as he heard the gurgling of the water they were ploughing through.

To pass the time, he set about making for himself a nest more comfortable than the one he had left. He felt for a soft place, and when he had found one, he tried to push the packages apart; but they were so tightly fixed that it cost him many an hour's hard labour. This was just what he wanted—something to occupy him, and make the time pass quickly. He could not tell the time; for, though he listened attentively for the bells on deck, still he heard them so indistinctly, that they were useless. He began to feel tired with his exertions, and, creeping into his hole, was soon asleep.

When he awoke, the vessel was rising and sinking, as if riding on the sea. It was strange he did not feel sick. It must have been the darkness, or the excitement of his mind, for the motion was soothing and pleasant to him. He had never felt so happy in all his life; the hours flew by quickly.

Each time, after he had slept, he would allowance himself half a biscuit. By this means, his stock of provisions would last him until far away from land, when there was no chance of their putting him on shore.

Once, whilst he was half dozing—about the ninth time he had slept, for he reckoned that way—he thought he felt something move quickly across his face. He raised his hand sharply, but there was nothing there. Again and again he felt it, until at last, growing active with curiosity, he snatched at it so dexterously that he seized hold of something soft like fur, that struggled violently to get free. As he was examining it with both hands, a sharp bite on one of his fingers made him loose his hold. But the discovery was a terrible one. A new enemy had sprung up; the rats of the vessel, growing famished, might attack him in the night. He must not sleep for the future; but be constantly on the watch. Feeling his way to a packet of hoes, he drew one out, and, armed with it, determined to defend himself against the hungry brutes. On all sides he could see their eyes shining among the holes, and if he slept he was lost.

How long he kept awake in this manner he could not tell; but at last he grew so weary that his eyes would close involuntarily; and, struggle as he would, and much as he feared the danger, he was in the end forced to rest. When he awoke, refreshed in body and mind, how he laughed at his foolish fears! Oh! he would make friends with the jolly rats; they were the best fellows in the world; and, instead of meaning to attack him, only came to him for company's sake. So now to dinner. But the biscuits were gone. Had he mislaid them? He felt everywhere in vain. As a flash of lightning the truth burst upon him. Yes! the rats had indeed attacked him in the night: his death was certain.

Now came the horrors of starvation. How slowly and surely the hunger crept upon him! He tried to sleep again and forget, but the gnawings in his stomach made it impossible. He felt about everywhere, to try and find something that would serve for food. He handled carefully every packet in his way, sniffing at them as well; but still no success, and the exercise only made his sufferings more keen. Then, as a last resource, he shouted for help. He listened, but no one came. Again he shouted, louder and louder; but no rescue. Mad with fear, he yelled and screamed, putting his hands to his mouth to carry the sound more surely; but the wind without was whistling too shrilly for any one to have heard him.

Must he die, then? After all his hopes and strugglings, must he die for want of food, that in a few weeks was to have been in plenty around him. No! no! and he shouted even more violently. Then, as he grew weak from exertion, he knelt in prayer, weeping as he called for mercy. At last, leaping on his feet, he tried to reach the mouth of the hold, beating the casks around him with his hoe. But no one came to the opening. Despair seized upon him, his legs tottered under him, and he sank senseless to the ground.

* * * * * * * * * * *

When he opened his eyes, the light blinded him. Where was he? Was it the dream of death?

He was swinging in a hammock, and, as he looked around the cabin, his eyes opened with wonder. It was still the ship, but how had he escaped from the hold?

At last he heard a step descending the ladder. It was his old friend the sailor.

"Oh! you're up, are you?" he said, laughing. "You seem to be pretty fond of woyaging. It was a near touch for you, my lad."

Tim only stared at him.

"You may open your eyes till you crack 'em, and well. Just another hour, and you'd a-wisited your great-grandmother sure enough."

"How did they find me?"

"It's precious lucky for you we've cows on board. Why, we wanted some grub for 'em, and my mate had to go fetch some. 'Jim!' he shouts to me. 'Below there!' cries I. 'There's a mate groaning som'ere,' says he. And we got a lantern; and there, sure enough, we found you."

"What did Captain say?" asked Tim.

"Why, he cursed a bit. Only, as you were a'most dead, and couldn't hear him, he gave over. The passengers all came to have a look at yer, and they axed him how much he'd take to carry you to port, and the women 'scribed it among us, and that's how you're here. It's the cheapest woyage as ever was made."

Hurrah for Australia! At last his hopes were to be fulfilled.

(To be Continued.)

TO CORRESPONDENTS.

SPECULATOR, Bedford-row; COX, Shrewsbury; J T—The French Lottery (Lingots d'Or) has not yet been drawn; nor has the time been named in the French newspapers

A SUBSCRIBER—We cannot advise you as to the Canada Loan Company

C L—"J H S" denotes "Jesus Hominum Salvator"

J T B—The profane lines commencing "Peter sat nodding," are from Byron's "Don Juan"

J A—Apply to Mr Lumley, bookseller, 19, Chancery-lane

M E B should address to the author, at the publisher's, &c.

R L will, perhaps, favour us by sending the MS.

C D, Henley-on-Thames—Your medal is of no value

A CONSTANT READER, Cornwall—Kilburn and Co, photographers, Regent-street

G G O, Hackney—At the British Museum Reading-room

A SUBSCRIBER, Dorrington—We prefer the "Gazetteer," just published by Longman and Co

ORTHOPEDIA—The Orthopædic Hospital is at 6, Bloomsbury-square

O D R—See Mr Christopher's recently published work on Natal

MARIE LOUISE—See the "History of Poland," in the "Cabinet Cyclopædia"

HELEN JANE—See "Horsley's History of Sussex"

E I C—We do not recommend doctoring pictures

J K M, Stornoway—Of Macintosh's successor, Cockspur-street, Charing-cross

A SUBSCRIBER—Middle Ages, the period from the eighth to the fifteenth century of the Christian era. We have not room for the Cardinals

W R C, Taunton—The address of Messrs Waterlow is London-wall

A SUBSCRIBER, Dublin—Rede's "Guide to the Stage," Onwhyn, Catherine-street, Strand

J S, Burnley—"When Greek meets Greek," &c., is from Nat Lee's "Alexander the Great"

BEPPO—See Mitchell's "Guide to the Ball-room"

IGNORAMUS, Sandwich—The impression is from the Crusade or Crown of John V., of Portugal

C B, Diss—See the "Self-Instructing Latin Grammar"

A Z, Birmingham—The Numbers may be had at our Office

J D, Paris—We have already fully illustrated the subject

A CORRESPONDENT—The address of the Ladies' College is 47, Bedford-square

BERKSHIRE—The subject was well considered by Messrs. Fox and Co., but no public details have been given

BORE DAICHWD, Chepstow—See Cliffe's "Book of North Wales"

MACBAON, Bath—Your coin is a penny of Henry III. The inscriptions are—on the obverse, or head side, "Henricus Rex III.;" and, on the reverse, "Ricard on Lund." Of no value

A CONSTANT SUBSCRIBER—Your coins are not worth more than their intrinsic value

HASTLEE—The price of a farthing of Queen Anne is from 7s to 12s. There are some few coins in her reign which produce a high price. That which determines the value of coins is preservation and rarity combined, and not antiquity

A CONSTANT READER—Kidd, of Norfolk—*Arms:* "Az. a fesse between three lozenges arg."

A SUBSCRIBER AB INITIO—There is no such published work

INFELIX—We do not know the motto that is borne by Procter, of Clewer Lodge, Berks

CÆSAROMAGNUS—The age varies according to the nature of the situation

THE LAST OF THE HARPIES—The spears are erect, but placed side by side on the shield—heraldically called "in fesse." If they were placed, one above the other, the description would be "three spears erect in pale"

MARS—The *Gazette* of the period

CONSTANTINE—The late George Lane Fox, Esq, of Bramham Park, married, in 1814, Georgiana-Henrietta, only daughter of Edward Perry Buckley, Esq, and left issue one son, George, married, in 1837, to Katherine, daughter of John Sein, Esq, M P; and two daughters, Georgiana-Maria and Frederica-Elizabeth

H—Leonard Troughear assumed the name and arms of Holmes, and bore those ensigns when raised to the Peerage. We can find no cost pertaining to his patronymic

EDWARD JAMES L—"Jewess" is the preferable word

SIGMA—It not allowable "to quarter the arms of a deceased wife" with one's own shield. During the lady's lifetime, her husband impales her armorial bearings; or, if she be an heiress, carries them on an escutcheon of pretence. In the latter case, they descend, as a quartering, to her children

J T—1. The habit of encircling the arms with a ribbon bearing the motto is not opposed to any law of heraldry. 2. No one is entitled to adopt either the shield or crest, as granted, unless he is included in the patent. 3. A person having his arms or crest engraved on his ring, though he does not seal with it, is clearly liable to be taxed. 4. Any motto may be assumed at pleasure.—5 Guillim, Nesbitt, and Edmondson

A CONSTANT READER—The coronet out of which a crest rises is simply an heraldic device, and does not indicate nobility

BON TON—The addition of the professional rank of the husband, to the wife or widow's name, has always appeared to us to be in bad taste, and not in accordance with the rules of good society

R S C—A Baronet's daughter retains her precedence after her marriage

ARMORIAL—If the stag's head be simply a fancy device, and is not placed on a wreath, our correspondent need not, in honour, take any notice of it in his return to the tax collector

H O—We can find no arms to the name of "Paradise"

X X, Bath—Love of Kent bore "Az. a tiger passant or." Love of Basing, Hampshire, "Arg. three bars gu. in chief, as many lions' heads erased of the last"

UNE LICENCE ASSIPTE—The arms of the Irish family of Kenney are—"Arg. two palets sa. between five mullets in saltire gu. *Crest:* A greyhound couchant, between two branches of laurel, in orle, ppr." An other family of the same name in Ireland bore "Per pale az. and or a fleur-de-lis between three crescents; and for *Crest*, a dexter arm in armour, embowed, holding in the hand a baton, all ppr."

YORKSHIREMAN—The motto is "Vive at Vivas"

CEYLON—Perhaps, an inquiry at Messrs Parker and Furnival's, military booksellers, Whitehall, would obtain the desired particulars

A READER—Apply at Messrs Cox and Co., Craig's-court, Charing-cross

A SUBSCRIBER—The crest of Parsons, of Herefordshire, was "a halbert headed arg., embrued gu."

A SUBSCRIBER SINCE 1844—A Prime Minister, as such, has no retiring pension

C D—We think the military surgeon might fairly use the cockade in his servant's hat

AP CADIVOR kindly sends us the following answer for our correspondent "CURATOR:"—The arms, and also an account of the family of Phillips of Cleveland, may be found in Whitaker's "History of Craven." The arms are, "Arg. three Phillips, or Sparrows, ppr"

J J L—"General Sir Charles Napier, G C B, United Service Club, Pall-Mall, London;" and "William Howitt, Esq. 28 Upper Avenue-road, St John's-wood, London"

A SUBSCRIBER—The information may be obtained on application at the Foreign-Office

HISTORICUS—The present Duke of Buckingham and Chandos is the descendant and senior representative of Mary Tudor, daughter, and eventually (in her issue) co-heir of King Henry VII. by his Queen, Elizabeth of York, heiress of the Plantagenets. His Grace derives this Royal descent through the families of Chandos, Bruce, Seymour, Grey, and Brandon, and is, after the present reigning House, the nearest in blood to the Royal line of any subject in England. The Crown Prince of Modena is, in fact, the present representative in blood of our Royal Families of Plantagenet, Tudor, and Stuart

A MANCHESTER SUBSCRIBER—The crest required is "A dexter hand fesseways couped gu., holding a cross crosslet fitchée in pale sa."

INVESTIGATOR—Arms of Kilby:—"Arg. three torteaux in fesse, between two barrulets sa. *Crest:* A hand issuing from a cloud in fesse pointing to a crosier in pale ppr"

A FRIEND TO ETIQUETTE—The eldest daughter of each generation is entitled, while unmarried, to the simple prefix of "Miss" to her surname. The sister and daughter of the head of a family have equal precedence

A NEW SUBSCRIBER—The arms of the family of Mshony, of West Carbery, county Cork, are —" Quarterly 1st and 4th or a lion rampt.; 2d. Per pale arg. and gu. a lion rampt.; 3rd. A chevron between three snakes erect. *Crest:* Out of a coronet, an arm embowed in armour holding a sword, the point transfixing"

P P Z—The arms of Fullen, or Fullcine, are—"As on a bend cotised arg. three escallops gu., on a chief or, as many martlets sa. *Crest:* A pelican on her nest, all or. *Motto:* Nulla pallescere culpâ." To be entitled to a coat of arms, it is necessary to show a clear unbroken descent from some ancestor who possessed the right, or else to become a grantee

WEIGHTMAN—The arms of Widdrington, of Northumberland:—"Quarterly, arg. and gu. a bend sa. *Crest:* A bull's head as platée." The descendants of the family have full and lawful right to these armorial bearings

P Q R—M'Intyre arms: "Quarterly, first and fourth or, an eagle displayed gu. armed and langued sa.; second, arg. a galley, her sails furled sa. flags gu.; third, arg. a sinister hand couped fesseways gu. holding a cross crosslet fitchée sa. *Crest:* A dexter hand holding a dagger in pale, both ppr. *Motto:* Per arduâ"

J K—Arms of Keyshaw—"Or, on a chief per pale gu. and sa. three bezants"

QUESTOR—Lord Woodhouselee was one of the Senators of the College of Justice in Scotland, and bore the titular honour he is known by. He was the late Alexander Fraser-Tytler

J W—The Hon. Baron Bickersteth, son of Lord Wenlock, is M.P. for Pontefract. The Hon W O Stanley, M.P. for Chester; and Lofius Wigram, Esq, Q.C., M.P. for the University of Cambridge

UCHTREDUS—Wood's edition of "Douglas' Peerage," and "Niabett and Chalmers' Works"

SCRIO—Which family of Hudson is our correspondent interested in? Hudson, of Wanlip, county Leicester, gu. "Per pale, embattled or and az. three martlets counterchanged." Hudson, of Ireland. "Or a chev. between three martlets sa." A descendant of the Walker family, through heiresses, can quarter their arms

AN ARTIST—Glen of that ilk bore "Arg. three martlets sa. *Crest:* A martlet sa. *Motto:* Alta pete

E F W—There are no arms registered to the family of Deming

AN OLD SUBSCRIBER—Arms of Scales:—"Gu. six escallops arg. three, two, and one. *Crest:* Out of a ducal coronet a plume of ostrich feathers arg. Gavadae"

AN INQUIRER—Arms of Bell, of Northumberland:—"Sa. a fesse erm. between three bells arg. *Crest:* A hawk, belled." On a former occasion, we gave a list of those entitled to bear supporters

C H M—Sandford and Anderson's "Royal Genealogies" give tabular pedigrees of the Royal Houses of Europe; and Mr Burke's "Patrician" contains genealogical memoirs of all

Q S, Bow—Lord Hill was General Commander-in-Chief

O S—The arms of Bickerton, "Arg. on a chev. sa. three pheons of the field. *Crest:* A martlet or."

A CONSTANT READER—The late Sir Joseph Radcliffe, Bart., of Milnesbridge House, derived in direct descent (through his mother, Mary Radcliffe) from Richard Radclyffe, of Radclyffe Tower, temp. Edward I., two branches of whose descendants were ennobled in the well known historical Earldoms of Sussex and Derwentwater. A full pedigree of Sir Joseph Radcliffe's maternal ancestors may be found in Debrett's "Baronetage for 1822"

W D B sends us the following curious fact as illustrative of the correctness of our remarks on the deplorable state of our parochial registers. About ten years ago, the registers of Kew, containing a number of Royal and noble marriages, births, and deaths, were stolen from the parish church. These documents contained the marriage of his Majesty King William IV., that of the Duke of Kent, father of our present Queen,

F B, Calcutta—The arms of Brown, of Colstoun, co. Haddington, from which the Countess of Dalhousie descended, are:—"Gu., three fleurs or," and were adopted, according to tradition, by a French warrior, who claimed alliance to the Royal family of France, and became the founder of the Scottish house of Brown, of Colstoun. As son, you are clearly entitled to the use of the crest and motto. The helmet surmounting the shield in the engraving sent is simply an Esquire's

INQUIRER, A SUBSCRIBER OF FIVE YEARS, HACO, and ARGENT—We have not the information required

B C B—There are several published histories of French families, which may be consulted at the British Museum library

L L L—The "vexata questio" of the Lemen succession would lead us, we fear, into a lengthened controversy. We must therefore decline *in limine* to enter on the subject.

KONIGSBERG—An address to the Crown might be carried. The arms of Montagu are "Quarterly 1st and 4th, arg. three lozenges conjoined in fesse gu., within a bordure sa. for Montagu. 2d and 3d, or, an eagle displayed vert, beaked and membered gu. *Crest:* A griffin's head couped, wings expanded or, gorged with a collar arg., charged with three lozenges gu."

X Y Z—We do not undertake to identify arms from a description

Q S F, Cumberland—Less expensive at Durham

J W—We can find no arms to the name of Waghorn

HOPE—The late Sir Stephen Remnant Chapman married a Miss Sneyd. He was the only Sir Stephen Chapman. Apply at a music-publisher's for the lady's address

S J G, Walworth—We have not room

CHERIE—We cannot inform you

A W, Brighton—Thanks

E C should apply by letter

G R, Woolwich, is thanked

STUDENS, Reading, had better stay at home

A STAUNCH SUBSCRIBER—We believe not

T P D S—We have not room

W G—y, Lines—Ineligible

C S S had better apply to a music publisher

H G, Canada West—Thanks

W JAMES—See the Great Exhibition Catalogue

W J—The price of the large view of Rome is 2s

I B, Derby—The daughter

B K is thanked

W B, Southampton, is thanked

A C, Madrid—Declined

H H W—Which family do Ha l?

A K—The Cuticus

To T N—Lines declined

W H S, Ipswich—Under consideration

LEX should consult a solicitor

L G, Porumna—We have not the address

CHARLOTTE EVANS will require a passport

K K—Received

JUSTINIAN—Received

EMMA E does not state the application

PHILO VERAX is thanked

A Y—We cannot inform you

X Y Z—7s 7d per quarter, postage included

VOLTIGEUR, Hull—Under consideration

P T will be liable to the charge

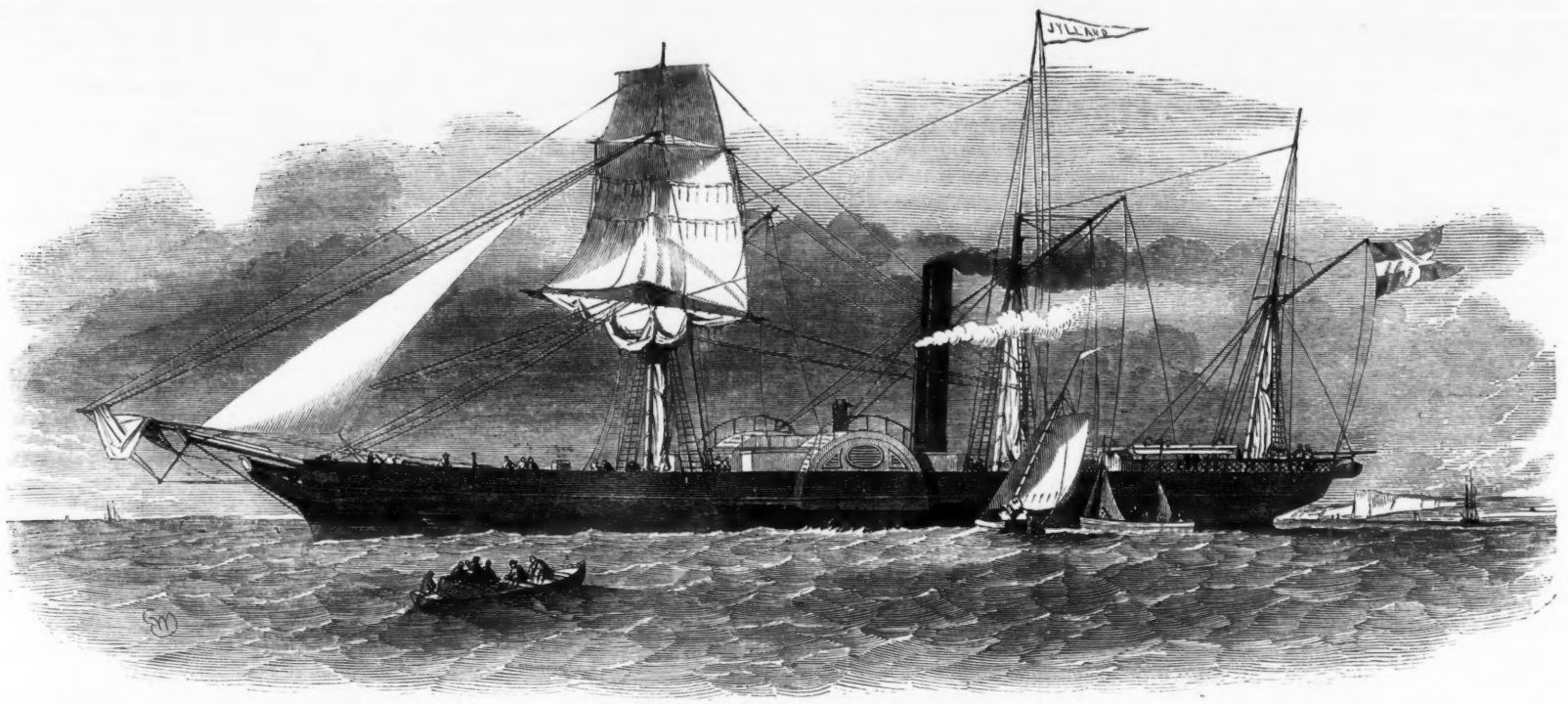
M H C should apply to the Tract Society

C R B—The Club is highly respectable

A CONSTANT SUBSCRIBER—The right leg

R H, Dalston—We have not room

S T—Apply at the Admiralty



THE "JYLLAND," DANISH GOVERNMENT STEAMER.

DANISH STEAM-SHIP "JYLLAND."

THE Iron Steam-ship *Jylland* has just completed her first voyage between one of the richest agricultural districts of the kingdom of Denmark and the Port of London, having succeeded in opening up a steam communication where until this time it had been deemed impossible. Several large lakes and an extensive inland water communication have their opening into the sea by means of a shallow bar-entrance, with not more than 7 feet; and it was long supposed that no vessel of a sufficiently large size, and, at the same time, possessing the qualities of a good wholesale sea boat, could be constructed, that should, at the same time, possess the small draft of water requisite for entering these waters. The *Jylland*, however, has proved herself to unite all these qualities, and has returned from having performed all that could be desired and more than had been promised: she did the voyage out in 45 hours, and home in 47; and brought to Blackwall a cargo of 130 head of cattle and horses, 70 pigs, besides a large stock of other agricultural produce, all in the most perfect condition, and on a draft of water one inch less than had been contracted. The *Jylland* has been constructed, under a grant of the Danish government for the encouragement of agriculture and commerce, for Mr. Regner Westenholtz, of Mark-lane. She is 450 tons burden, and propelled by engines of 120 horse-power; the ship and engines having been constructed, and the ship wholly fitted out, by Messrs. Robinsons and Russell, of Millwall.

HAMBURG GOLD MEDAL.

WRECK OF THE "HELENA SLOWMAN" STEAMER.

THIS chaste and beautifully-executed Gold Medal has been presented by the Senate of the Free Hanseatic City of Hamburg to Capt. Honey, for his noble conduct in rescuing the passengers and crew of the *Helena Slowman*. This new iron screw steamer, built at Hull, and of 800 tons burden, 180 horse-power, and commanded by Captain Paulsen, left Hamburg for New York in October last, with a valuable mixed cargo and 154 passengers, manned by a crew of 36 men. The vessel was overtaken by a frightful storm, which unshipped the rudder, and rendered the steamer utterly unmanageable; when, providentially, the *Devonshire*, American packet-ship, came in sight, in lat. 42.13, long. 61.30; her commander, Captain Honey, instantly bore down, and, after much trouble and imminent danger, succeeded in bringing the passengers and crew safely on board his own vessel.

The third mate's boat had made two trips, but was stove in when making the third; and the mate, Mr. Johnson, one seaman, and seven passengers, met with a watery grave.

The Senate also presented the first mate with a similar medal, enclosed in a velvet box, ornamented with most beautiful silver open chasing.

This is an example on the part of the Senate of Hamburg, which it would be well if the British Government would occasionally imitate.

HAMBURG GOLD MEDAL.—PRESENTED TO CAPTAIN HONEY.

ERRIS FISHING SETTLEMENT.—LIFE FISHING-BOATS, "ERRETER" AND "HOPE."

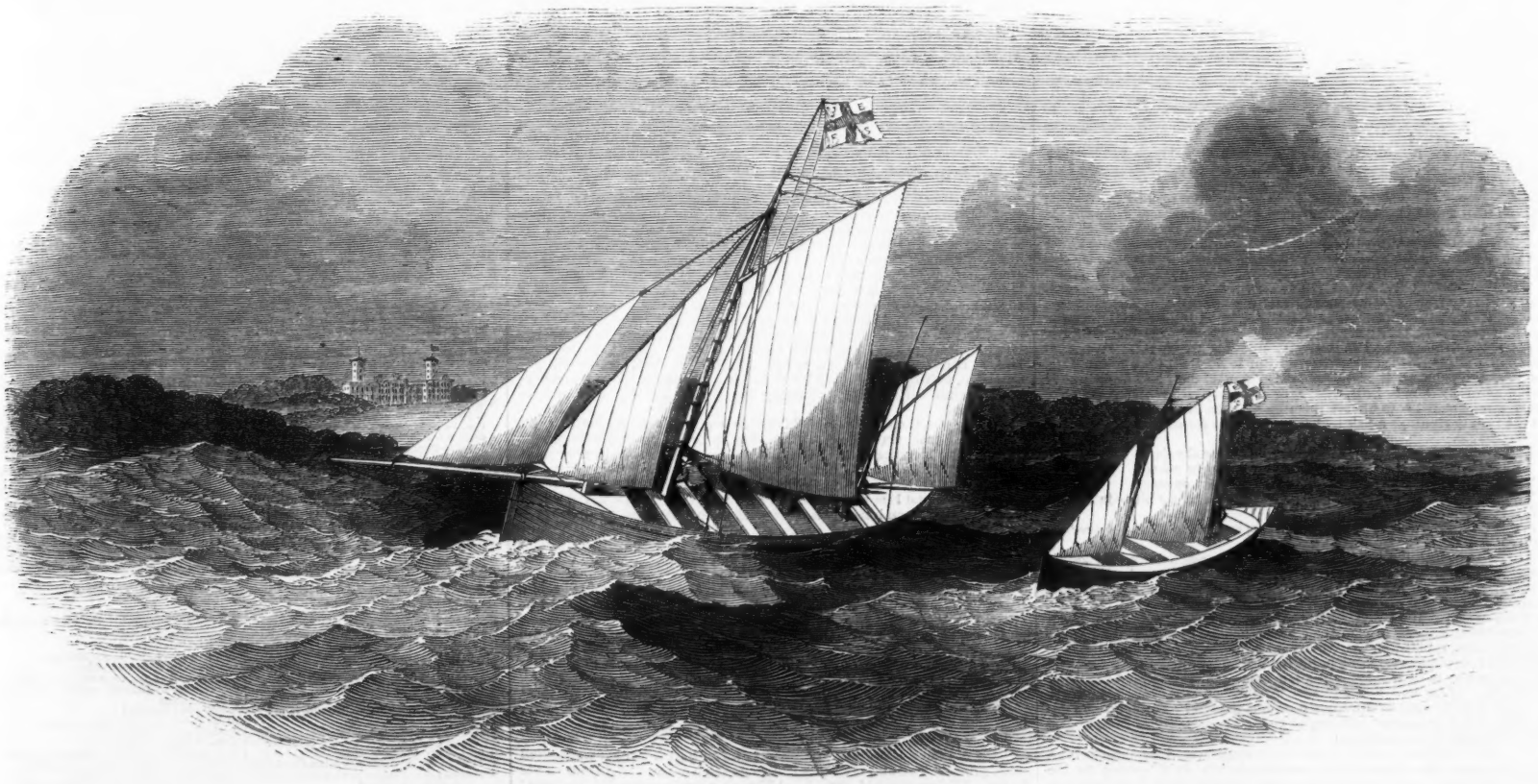
THESE Life-boats, which are fitted up as fishing-boats, and built by Messrs. T. and J. White, of Cowes, for the Erris Fishing Settlement and Converts Employment Society, Nelmullet, county of Mayo, have just been launched and tried by W. T. Campbell, Esq., the superintendent of the above institution. The above is a Sketch of their recent trial off Osborne House, the marine residence of her Majesty. The large boat is 32 feet long, 10 feet beam, and 4 feet deep, with air compartments in bow and stern, which extend round her gunwale, having twelve divisions, and down to platform, under which is a water-kelson running fore and aft, and capable of holding one ton of water ballast, which can also be used as a well for live fish, being fitted with air valves. The advantage to be derived from the buoyant properties of this boat is, that, having a displacement in her compartments of about four tons, she may, in addition to her water-kelson, carry one ton of iron ballast; and, in case of being filled in a tremendous gale at sea, have three tons of buoyant power, which makes it impossible for her to sink: the boat also being much stiffer with water in than when empty, renders her altogether a most valuable and serviceable boat, for the double purpose of fishing or saving life from wreck, should her services be required for that purpose. During her trial, with all sails set, and only her water-kelson filled as ballast, occasional strong puffs put her lee gunwale under water from one to two feet, and it was found that when water came into the boat it added considerably to her stability.

The Erris Fishing and Industrial Settlement was commenced in September, 1849, with the object of affording instruction to the rising generation, and of stirring up amongst them habits of industry, and an idea of the value of remunerative employment. The plan adopted is to receive the boys of the peasantry who have attained the age of from 10 to 16 years, as apprentices for four or six years, according to their age; to board, lodge, educate, and train them to the improved modes of deep sea fishing, the manufacture of nets and lines, boat-building, &c.

The design of this institution recommends itself strongly to our judgment and approval: it seeks to reach the root of Ireland's disease in the rescue of her youth from the baneful example of indolence and ignorance under which previous generations have grown up; and it seeks to turn to an available account the stores which Divine Providence has planted within the people's reach. The treasures of the earth and sea must be sought for with labour and diligence, and in labour well directed it will be found that there is abundant profit. We hope the promoters of this institution will receive liberal support from a generous and philanthropic public, and that they may thus be enabled efficiently to carry out their plans; many a valuable offspring of benevolence, which might have become of infinite national benefit, has perished in its infancy because it did not obtain an interest in public estimation.

PLATE PRESENTED TO CAPTAIN J. C. DALRYMPLE HAY.

THIS elegant piece of Plate has just been presented to Captain John C.



ERRIS FISHING SETTLEMENT LIFE FISHING-BOATS, "ERRETER" AND "HOPE."

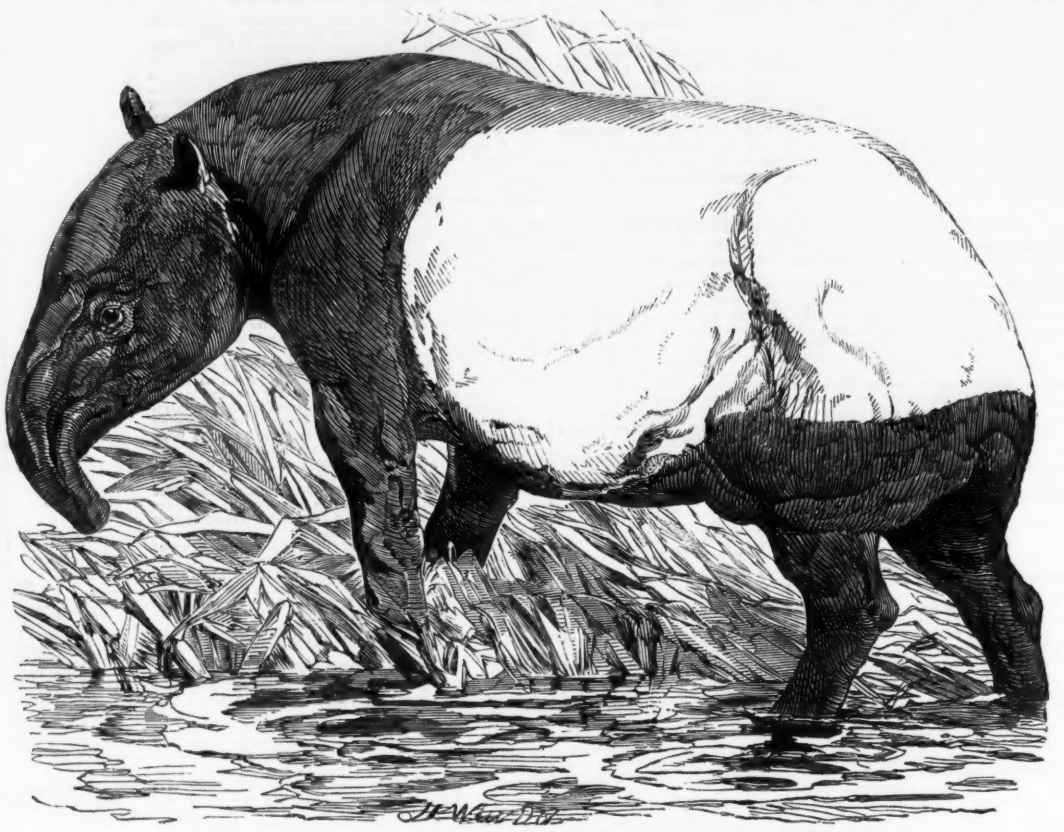
Dalrymple Hay, of her Majesty's brig *Columbine*, by Messrs. Jardine, Matheson, and Co., and the principal merchants in China, for Captain Hay's valuable services while in command of the *Columbine*, in suppressing piracy in the Chinese seas.

The testimonial is a handsome table-ornament. The form of the Vase is round, and divided into four compartments; three of which represent the engagements at the different periods with the pirates; the fourth is allegorical. At the base are three Chinese figures, kneeling in submissive attitude; and on the cover is Britannia and the Sea Horse. The Vase stands on an octagonal ebony base, on which are two plates with the following inscription:—

PLATE PRESENTED TO CAPTAIN J. C. DALRYMPLE HAY, R.N.

Presented to Captain JOHN C. DALRYMPLE HAY, of her Majesty's brig *Columbine*, as a memorial of the important service rendered by him to the commerce in China, in the destruction, by the forces under his command, of the piratical fleet of Shap-ng-Tsai, consisting of 64 junks, mounting 1200 guns, and carrying 3000 men, in the Tonquin River, on the 20th October, 1849, by Jardine, Matheson, and Co., for themselves and insurance offices under their charge; Dent and Co., for themselves and insurance offices under their charge; Macvier and Co.; Gilman and Co.; Jamieson, Edgar, and Co.; George Lyall and Co.; Fletcher and Co.; Dirom Gray and Co.; Prestonjee, Framjee, Cama, and Co.; Cowasjee, Sapoorjee, Lungrana, David Sassoon, Sons, and Co.; and 15 Parsee, Hindoo, and Mahomedan firms, of Canton, Hong-Kong.—20th February, 1850.

The Vase forms part only of the presentation, the remainder consisting of a set of silver dishes and covers; the whole being from the establishment of Messrs. Hunt and Roskell, 156, New Bond-street.



MALAYAN TAPIR, IN THE MENAGERIE OF THE ZOOLOGICAL SOCIETY, REGENT'S PARK.

MALAYAN TAPIR,

IN THE GARDENS OF THE ZOOLOGICAL SOCIETY, REGENT'S PARK.

THE list of additions to the managerie, which is now issued monthly to the Fellows of the Zoological Society, is not only a most convenient and instructive arrangement for their benefit, but a most irrefragible proof of the energy and success with which that establishment is conducted. In looking over the lists which were circulated in April and the present month, we find that the novelties which have been obtained since the close of 1850 are so numerous, that they would in themselves alone form a collection sufficient to repay one for a morning spent among them.

At this particular period, when all the world is crowding to our shores, it is fortunate for the Zoological Society that their delightful garden has reached a degree of beauty and reputation which has never been exceeded either in its own history, or by any of the kindred institutions on the Continent. There is no doubt that a most brilliant season will reward the managers for the spirited improvements which they have effected, and afford fresh sinews for still further progress when the excitement of the World's Fair has faded into the past.

The first musical performance of the Life Guards, on Saturday week, attracted a numerous muster of Fellows and visitors, notwithstanding the unfavourable circumstance of a May shower; and we then took an opportunity of looking at most of the novelties to which we have alluded. Among them we discovered the subject of our Illustration, which is, in every respect (after the Elephant calf), the most interesting among them.

The *Saladang Gindol Tenmu*, or Malayan Tapir (*Tapirus Malayanus*), much exceeds the American tapir in size, and is peculiarly remarkable in respect to colour. It is a native of Sumatra, and some of the other islands of the Indian Archipelago, as well as of the Malayan peninsula. The Society's specimen was obtained from the latter locality, having been captured at the foot of Mount Ophir about the end of last Summer, in company with another, which is now, as we were informed, at sea, and daily expected by the Society to arrive at their menagerie.

The Malayan tapir first became known to Sir Stamford Raffles in 1805, a living specimen having been sent to Sir George Leith when Governor of Penang. It was afterwards observed by Major Farquhar, in the vicinity of Malacca. A drawing and description of it was communicated by him to the Asiatic Society, in 1816; and a living subject was afterwards sent to the menagerie at Barrackpore, from Bencoolen. Sir Stamford Raffles presented the first specimen which reached England to the Zoological Society, on his return from Sumatra, but it did not long survive its arrival.

The present animal is said to be about two years old, and, although of large size, is still considerably short of its mature stature, which Sir Stamford Raffles describes as equalling the buffalo in body.

Although differing in many essential characters from the Tapir of America, the Malayan Tapir resembles it in the spotted colouration of the young, which, however, disappears at a much earlier period than in that species.

The Tapir of the Old World is particularly interesting to palæontologists as the nearest existing form to the palæotherium; and it would almost seem as if the restoration of that extinct form in Professor Owen's admirably illustrated work on British Fossil Mammalia had been sketched from the subject now in the Gardens, instead of being constructed from the accurate reasoning upon osteological data for which he is so celebrated.

THE CRYPT OF THE CITY OF LONDON GUILDHALL.

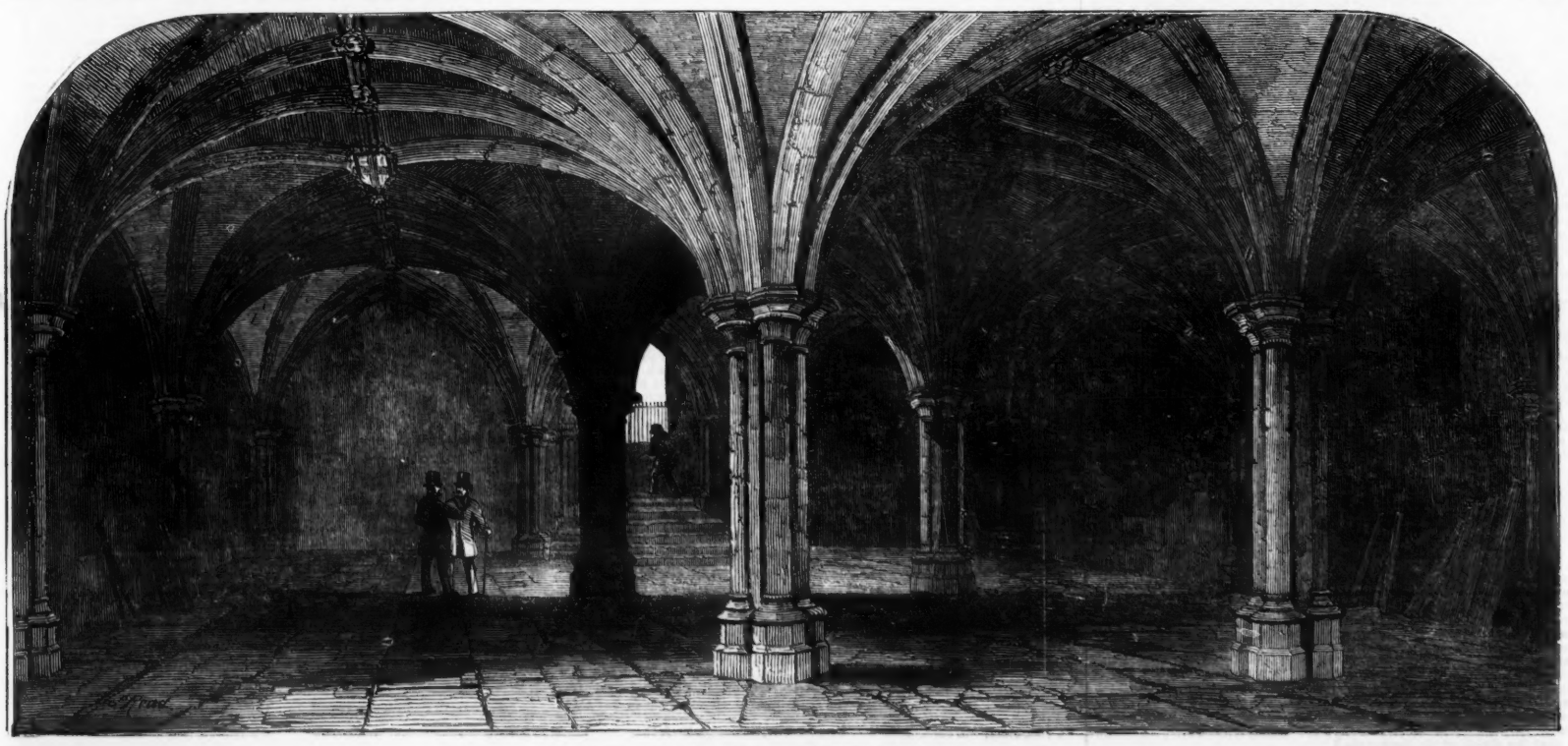
THERE is so little to admire in the present superstructure of the Guildhall, in King-street, that few persons, save those specially devoted to archæological pursuits, are aware that beneath the ill-assorted pile is a rare antiquarian treasure—the vaulting of the ancient Hall, erected in the year 1411, and the only portion of the edifice which escaped the Great Fire of 1666. This interesting relic is rarely shown to visitors; but more than one attempt has been made to restore it architecturally, which has been partially done; and it is by no means creditable to the Corporation that they should allow the place to fall into decay, their attention appearing to have been confined to the festive apartment above.

The Crypt is divided into aisles by clustered columns, from which spring the stone-ribbed groins of the vaulting, composed partly of chalk and bricks, the principal intersections being covered with carved bosses of flowers, or heads and shields.

The north and south aisles had formerly mullioned windows, now walled up. At the eastern end there is a fine Early English arched entrance, in fair preservation; and in the south-eastern angle is an octangular recess, which formerly was ceiled by an elegantly groined roof, some remains of the corbels and springings being discernible on the walls. The height of the Crypt, from the base of the columns to the intersection of the groins, is 13 feet.

The mouldings of the capitals and the ribs of the vaulting are much dilapidated, one of the clustered pillars supporting the vaulting being much decayed. Mr. Bunning, the City architect, caused it to be removed, and a new clustered column of Purbeck marble to be substituted. The whole of the stonework is now being rubbed down and cleaned, and the clustered shafts and capitals repaired.

The large antique bowl standing in the Crypt, opposite the north entrance, is of Egyptian red granite, and was presented to the Corpora-



THE CRYPT OF THE CITY OF LONDON GUILDHALL.

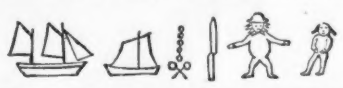
tion of London by Major Cookson, having been sent to England by him in the ship *Anacreon*, from Alexandria, with a letter dated 1st Sept., 1802, requesting the Corporation would do him the honour to accept it, as a testimony of his respect, and a memorial of the British achievements in Egypt.

The Crypt has already been inspected by a great number of our metropolitan visitors, who have been much gratified with Mr. Bunning's restoration of the columns and arches. We should add, that, at the last meeting of the Archæological Association, Mr. Lott (the founder of the museum of City antiquities, at the Guildhall) proposed to devote a day, to be fixed by the council of the Association, to make a party, including the many country and foreign members now in London, and to accompany them to the Crypt and other objects of interest not usually shown to strangers. The offer was gladly accepted, and acknowledged by the president.

THE SEARCH FOR SIR JOHN FRANKLIN.

We have been favoured with the following extract from a letter, received 23rd ult., from Lieutenant W. H. Hooper, dated Fort Simpson, Mackenzie River, 29th October, 1850:—

"Here we are again, safe and sound, and snugly moored for the winter, awaiting only a more genial season for our return to England. My last letter was dated from Fort Good Hope, July 17th, and I shall continue from that time. At eight P.M., on that day, we started, crossed the Arctic Circle in the night, and reaching Point Separation on the morning of the 20th, left that place in the afternoon, after being nearly devoured by mosquitos and gad-flies. We continued our descent of the river, pulling by day, and drifting by night. On the morning of the 22nd, we got sight once more of the Arctic Ocean, and landing on Garry Island, which lies off the north of the river. From a high part our ocean view presented, to our sorrow, ice in profusion, and solid as a rock, which immediately acted as a terrible damper upon our hitherto ardent anticipations of a successful voyage; the temperature also changed terribly, and our cold weather clothes took the place of lighter habiliments. On the 25th, we reached Toker Point, and found a number of Esquimaux with their dwellings, but no person visible; here we deposited a few trinkets, together with a hieroglyphic scratched on a board, of which this is a correct delineation.



"Leaving this spot in the evening, we ran along the coast all night, seeing the sun above the horizon at midnight, but we managed to get embayed in the pack by morning; and now fairly began our troubles, and a series of detentions which utterly frustrated all hopes of success. We were obliged to "take" (*i. e.*, force through) the pack. Finding we could not get on, we were compelled to retrograde for some distance, and then land on a miserable spot, with no other shelter than sieve-like tents from melting snow and heavy rains, and only rotten wood for fires. Here for three days we remained, with a gale of wind, and temperature frequently below freezing point, but managed to get away on the 29th, spending the day in toilsome endeavours to force a passage through the ice, seven or eight feet thick, and sometimes more, now rising 20 or 30 feet high, like so many houses in ruins, and again large flat pieces or fields several acres in extent. It is difficult for you to conceive how greatly chilled the wind becomes in its passage over ice. Here, in the month of July, a south breeze, which ought to be the softest and warmest exhalation of Æolus, stagnates the blood by its freezing blasts. At night, after two hour's very great toil in again forcing through the pack from seaward, we got on shore at point M'Kinley. Here was an Esquimaux village; most of the huts falling to ruins, and apparently long desolate. We were unable to start from this place for two days. we found the frame of an oomiak, or woman's boat, as also those of two or three kyaks, or men's boats; some harpoons, with flint heads, lashed on with sinews; double and single-bladed paddles, bones of small whales, wooden scoops, and ladles, pieces of wood drilled for producing fire, pits for containing blubber, &c.; also the carcase of a wolf, apparently dead from starvation. The nets were laid out, and a few fish taken; a young seal also got entangled in them; but the man who searched the nets, a Canadian, who had never been on the coast fancying it some monster, let it escape. We also got some swans and geese. We got away from this place 1st August, the ice having gone off shore a little, and we landed for the night not far from Cape Brown. On the evening of the 3rd we had to break through the pack from seaward to get to shore. When inside the pack, we made for the shore, and encamped on Cape Dalhousie for the night. The 4th, being Sunday, we remained there; on the 5th, we reached Nicholson's Island; and on the 6th, proceeded across to Point Peregrine Maitland, and met the first Esquimaux we saw in the trip, an old and a young woman, who were in a horrid fright, and commenced a loud jabber, apparently signing and entreating us to go away; by reciprocal signs and a few trinkets, we soon reassured them; and the old lady went into the men's tent, and sat down at her ease. They were horrible dirty both in person and dress, which latter was the same as we saw at the westward. Here I began to collect some more words: the few which I collected on the last trip they generally understood and repeated, but with a different pronunciation. We remained all the 7th, detained by bad weather. I send you a representation of the Esquimaux ladies, and the primitive tools we found

near their dwellings: the figure represents the younger woman, with her hair bound up in immense bows at the back of her head, and a huge mitten of rabbit-skin in her left hand, to which there was no accompaniment for the other member. She wore a frock of seal skin, with pointed ends; tight breeches and boots made of the same material. Her interesting baby was in its natural garment, shoved up at her back between her frock and her skin, and there securely retained by means of a leather or hide girdle. On the morning of the 8th we quitted these charming creatures with a sigh, and steered for Cape Bathurst, not far from which we observed twelve tents of Esquimaux with a great number of natives around them; soon eighteen kyaks, containing a man each, and four oomiahs filled with women and juveniles, came out to us; they approached without the slightest sign of fear, shouting, screaming, and gesticulating merrily. The men laid hold of our boat and towed alongside, throwing in deer meat skins. fish, &c.; while the ladies seemed half mad, running quite across our bows, throwing in wild fowl, boots, and all sorts of things, all of which however we declined and returned. We made the men push off, and encamped at night on one of the Baillie Islands: several men remained with us and were most friendly, but strongly addicted to pilfering. On the 9th, after going to the extreme of the Island, we were again stopped by ice and had to land. Crowds of natives came over to us. In the afternoon we saw a bear upon the ice, and gave chase, together with the natives. Our small boat went by sea to cut off his escape, while I, with some of the men and Esquimaux, took the hill above him with a double-barrelled gun; I hit him at more than 100 yards distant, drawing first blood, at which he dropped; and then was a loud shout of delight from our friends, but a grizzly bear is not so easily done for; he soon got up again and ran on as if nothing had happened, taking the water with a plunge, and climbing the masses of ice which lay in his path. An Esquimaux now went after him in his kyak, and it was interesting to see how well he managed his tiny craft, and tormented poor bruin. He would go close up, let draw an arrow, and then, as the bear turned to attack him, back water and splash in his face with his double-bladed paddle. After five or six hours chase, and when the poor beast was wounded in three or four places by the guns, and looked like a porcupine for arrows, he was at last shot dead by one of the men in the boats, and brought on shore. He was in girth as great as a pony; his entire weight was estimated at 440 lb. The carcass was divided equally between ourselves and friends, and our men feasted for two days off their portion; I tried a steak also, and found it excellent fare. From this date until the 14th, we were constantly near Cape Bathurst, trying to find a passage past it; but the compact state of the ice resisted our utmost efforts. The natives were constantly with us, and the greatest harmony existed; but they are arrant thieves, and require constant watching. One fellow put my silver spoon up his arm, another buried the frying pan, and our pockets were assidiously, though secretly tried, but all missing articles were generally given up on demand. I was, of course, busy getting words but found it difficult to make them comprehend my desire, being obliged to have recourse to imitations of various kinds, either by voice, gesture, or a sketch on paper, which were generally successful, causing huge bursts of merriment. On the night of the 14th we set sail on our return, being completely stopped from advancing, of which the captain gave up all hopes. On the 21st we landed at Port M'Kinley again, and met one man and three women, Esquimaux, who received a few presents, and were thereby much delighted. I now pass on to the last day of August, when we re-entered the river; and, on the 5th of this month, after having touched at all the lower forts, arrived at this place, and most were truly delighted, for a more thoroughly disagreeable trip I never made. Nearly the whole period of our sea voyage, that is from exit to entrance of this river, we were engaged with ice in weather, that, in severity, would I think be considered great in England even in winter. Our food was bad enough, consisting of dried deers' meat and pemmican, and our lodging was provocative of rheumatic ills, and to crown all the search was utterly unsuccessful. I do not think it probable we shall renew our search, as there are no remaining means here of equipping, or provisioning us for another season; no, no, I think we shall have a fair chance of returning this time to our homes, from which we shall have been absent four years. We leave this in June, and hope to reach England in October.

[Commander Pullen's lengthy dispatch details heavy work, great hardships and disappointments, and also shews the unfitness and dangerous state of the boats for so daring an enterprise; and details a melancholy examination into a massacre of six inoffensive Esquimaux, while engaged in barter, by some Indians near the mouth of the Mackenzie.]

LITTLE'S IMPROVEMENTS IN ELECTRO-TELEGRAPHIC INSTRUMENTS.

One of the most important improvements in the Electric Telegraph has just been effected by Mr. George Little.

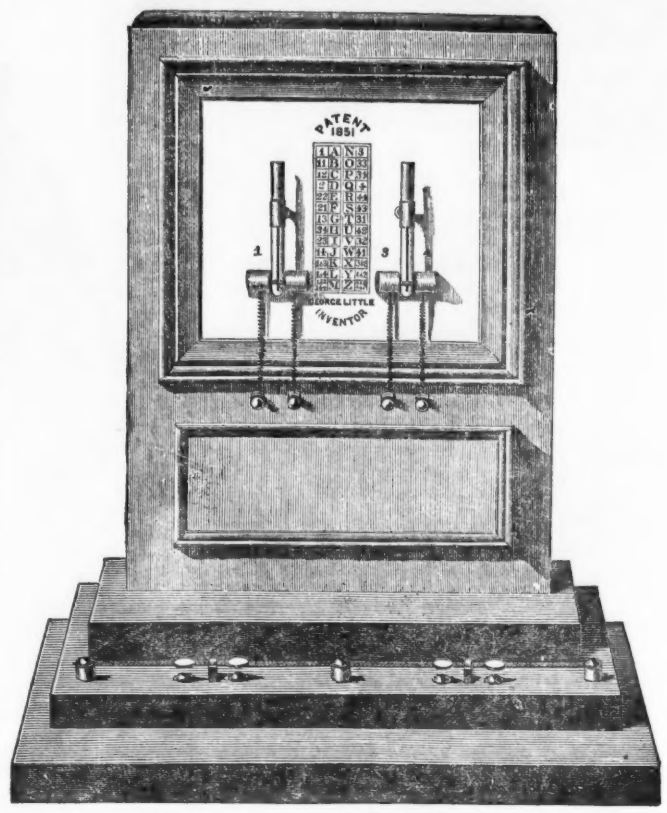
The annoyances to which the operators in Electro-Telegraphic manipulation are subject are very great, and out of the many annoyances which so frequently occur there are five; namely—Imperfect insulation of the line or conducting wires, the vibration of the indicators thereby preventing the communications from being read off clearly; the deflection of the indicators from local causes, such as the passing of currents of atmospheric electricity downwards to the earth, and *vice versâ*; the demagnetization of the indicators by lightning, which has the effect of stopping all communications for a time; and great trouble in adjusting the indicators upon their axes.

To those who understand the science of Electro-Telegraphy, it will be seen, on reference to the accompanying Engraving, in what way Mr. Little obviates the difficulties named. On the dial plate is secured two sockets, which is made to hold in its upper part a permanent magnet, which is termed by the inventor a magnetic reservoir. Immediately underneath, and adhering to the same, by attraction, is a sewing-needle, which is surrounded by spirits of wine, contained in a glass tube, which is secured to the bottom part of the socket. Near the bottom of such glass tube is seen the small coil of insulated copper-wire.

The object of the large magnet is to keep up at all times a constant supply of magnetic power in the needle, so that if at any time lightning should make its way into the instrument, and rob the needle of any of its power, it will immediately take up a fresh supply without at all interfering with any communication that may be going on at the time. And as the needle is held up by magnetic attraction, the use of the axis is thereby dispensed with, the spirits in the tube preventing any sudden jarring and vibration. The socket which is jointed to the dial-plate enables the operator to move the whole of the apparatus to the right or to the left, as occasion may require, if the needle should be bent out of its course from local causes.

In indicating letters and words by this Telegraph, never more than two indications are required.

The inventor has not only produced an instrument beautiful in point of arrangement and simplicity, but one that, as regards economy, we do not think can be surpassed.

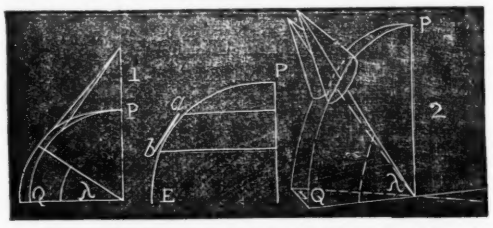


ROTATION OF THE EARTH.

(*Concluded from page* 420.)

The following is an abstract of the principal details connected with the Rev. Mr. Baden Powell's discourse and illustrations.

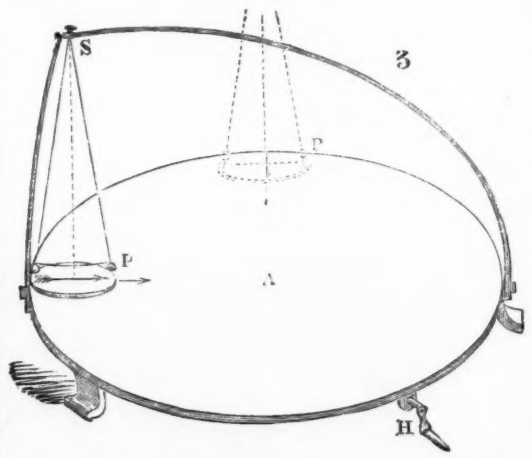
He observed, that an idea of such an effect as the one under consideration seems to have occurred long ago, and is mentioned in a paper in the "Philosophical Transactions" by the Marquis de Poli,* in the course of some observations on the pendulum, of a different kind. He remarks, "I then considered (adopting the hypothesis of the earth's motion), that in one oscillation of the pendulum *there would not be described from its centre perfectly one and the same arc in the same plane:*" but does not pursue the subject, as being foreign to his immediate object. It appears also †, that in 1837 Poisson had hinted at such an effect, but supposed it of insensible amount. To some minds difficulties present themselves in the first instance, which are easily removed by a few simple illustrations. In the first place, the deviation from parallelism itself of the meridian of any place, during the rotation of the earth, is a simple geometrical question, easily determined, and the inclination expressed by a trigonometrical formula. This was illustrated



by two small models (figures 1 and 2) shewing the tangent planes of two meridians, P Q, P Q, meeting in the axis of the earth produced: then, if the inclination of the meridians $= \theta$:—

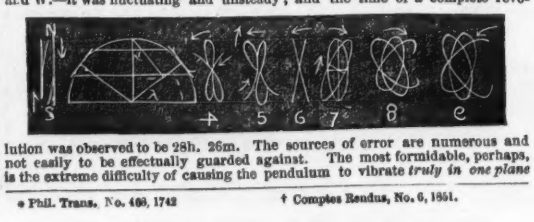
Then $\cos.\ \theta = \cos.^2 \lambda + \sin.^2 \lambda \cos. l$.

In the next place, the independence of the motion of the pendulum, notwithstanding that the point of support is carried with the earth in its rotation, and that the whole, to form a part of the earth, is a point easily elucidated by very simple experiments, in which the vibration of a small pendulum (P, fig. 3) is



seen to continue parallel to itself, notwithstanding a motion given to the point of support (S); the effect being, in fact, only a simple consequence of the co-existence of two motions communicated to a body at the same time. The apparatus shewn in fig. 3, lent by Mr. Bishop, was here exhibited. Motion is communicated to the plate A by means of the handle H.

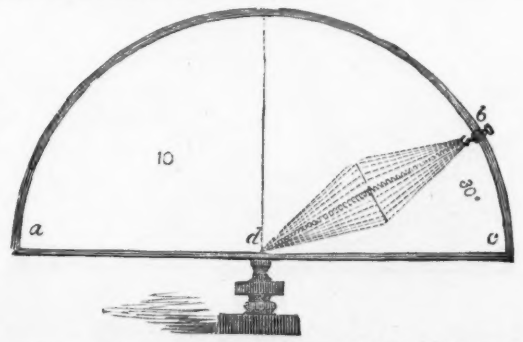
The experiment originally made by M. Foucault, in the cellar of his mother's house, was repeated and confirmed by M. Arago, and other eminent scientific men, with all due precautions, in Paris, as also at Ghent, Brussels, and elsewhere. In England, besides the public repetitions at the Russell, London, and Polytechnic Institutions, by Dr. Rogers, Mr. Bishop, and Mr. Bass, the experiment has been tried at York by Professor Phillips, and at Bristol by Mr. Bunt, with careful attention to all circumstances likely to ensure the avoidance of the sources of error, and to secure precise results. At the Royal Institution, on the present occasion, the experiment was exhibited under two modifications by Dr. B. Jones and Mr. Bass, by arrangements shewn in our Illustration. Other observers have also repeated it in various places, especially at Dublin, where Messrs. Haughton and Galbraith, Fellows of Trinity College, Dublin, have pursued the research with all imaginable precautions, and have obtained results somewhat different from those of other observers. According to nearly all the other experiments, the rate of deviation continued uniform: according to Messrs. Haughton and Galbraith it varied; commencing from N., it attained a minimum between N. and E., and a maximum between S. and W.—it was fluctuating and unsteady; and the time of a complete revo-



lution was observed to be 28h. 26m. The sources of error are numerous and not easily to be effectually guarded against. The most formidable, perhaps, is the extreme difficulty of causing the pendulum to vibrate *truly in one plane* (Figure 6 giving the curve of its path as shewn in an exaggerated manner at Figures 4 and 5), and to prevent its motion in a narrow ellipse. When this takes place, and the arc is considerable, the direction of the major axis is continually changing, as shewn in Figures 7, 8, and 9, owing to a well-known mechanical cause*; but this deviation is always in the same direction as that of the original motion of the pendulum, and consequently changes when that direction is changed. The true deviation may be distinguished from this, in that it is always from E. to W. independently of the direction of the original impulse, and the ball always passes accurately through the centre in every oscillation, whereas in the former arc it never does. For great accuracy, a variety of other precautions are requisite as to the perfect freedom of suspension, guarding against currents, &c.: also the elliptic deviation may oppose that due to the earth's rotation, and thus the latter may manifest itself in spite of the former. It is extremely probable that many of the public repetitions may have been affected by these causes of error; yet some of those referred to have been made by men of so much eminence and experience as observers, as to render it highly improbable that they should not have been sufficiently guarded against every source of fallacy. The accordance of many of the results at different places within fair limits of error, is also a strong argument in favour of their accuracy and trustworthiness. The rates of deviation for one hour as determined at different places do not seem to be more discrepant than would accord generally with the differences of latitude. The experiments give:—

At Paris	..	..	about 11° 30′
Bristol	..	..	.. 11 42
Dublin	..	..	.. 12 00
York	..	..	.. 13 00

To apprehend the theoretical principle, it is necessary to take into account—1st, the simple inclination of two successive positions of the meridian of a place to each other, after an interval of time; 2nd, the independence of the motion of the base of the pendulum, of the rotation of the point of support; and, 3rdly, that the ball, though free in this sense, is not, however, wholly free, being continually drawn down by gravity in a direction *continually changing* relatively to the original direction of vibration, as the earth revolves. Hence, though, from the second cause, the ball would have a tendency always to preserve a motion parallel to its original motion, and thus to deviate regularly from the meridian, it will, from the third cause, not preserve this exact parallelism, but will take an intermediate direction. The exact determination of this direction cannot be made on any general considerations; but, according to the Astronomer Royal, Professor Airey, must be the result of detailed mathematical investigation. Thus, in general, in any illustrative or analogous case, so long as the axis of vibration will continue parallel to itself, the arc of vibration will continue parallel to itself; but if the axis do not continue parallel, the direction of the arc of vibration will deviate. This distinction has been laid down, and illustrated, experimentally, by Mr. Wheatstone. The investigation, as pursued by Mr. Binet †, as well as by Mr. Sylvester ‡, and other mathematicians, is primarily founded on the method long since proposed by Euler, of resolving the rotatory motion of one point on the earth's surface into two, one about the vertical of that point, the other about an axis at right angles to it, of which the latter is the part effective in determining the direction of gravity on the pendulum, and is proportional to the sine of the latitude of the point. Mr. Binet makes this general theorem the foundation of an analytical investigation, in which the conditions of the motion of the pendulum generally are expressed by certain differential equations, the integration of which conducts him to certain expressions, which, when simplified by the consideration of limiting the vibration to small arcs, give the azimuthal velocity uniform in the direction from E. to W., and in a simple proportion to the sine of the latitude, giving, therefore, the deviation for one hour in the latitude of Paris about 11½ degrees, and the time of a complete revolution 32h. 8m. An investigation has also been made, independently, by the Astronomer Royal, leading to the same result. Other mathematical solutions have also been proposed by Dr. Day, of Bristol, and Mr. J. R. Young, late Professor of Mathematics at Belfast. The latter gentleman has obtained, as a consequence of his investigation, one remarkable result, which he states thus:—"The arc of the circular rim of the table, subtended by the angle of deviation at its centre, is always (in one revolution of the earth) *exactly equal* to the difference in *length* of the two parallels of latitude described by the centre and extremity of the meridional diameter of the table." §



Modifications of the principle have been suggested by M. Chesles, on the idea of the difference of rotatory velocity between any two points (*a* and *b*, Fig. 1) on the same meridian (E P), which difference, insensible as it might seem to be for the minute length of a vibration, he shews will in successive vibrations become sensible. This idea is nearly the same as that announced by Laplace ‖, producing a deviation in the plane of a projectile fixed in the direction of the meridian. The same idea has been discussed by other mathematicians. M. Poinsot has suggested that if two balls, suspended by separate strings, hanging together in contact and consequently both partaking in the velocity of rotation of that point of the earth, were to be suddenly separated by releasing a spring placed between them, and at first confined by a string, they would then possess

* Phil. Trans. No. 469, 1742

† Comptes Rendus, No. 6, 1851.

* See Herschel's Astronomy, p. 444.
‡ *Literary Gazette*, March 22 and April 19.
‖ Méc. Cel. vol. iv. ch. 5

† Comptes Rendus, No. 6-7.
§ *Mechanic's Magazine*, May 31, 1851.

the difference of velocity belonging to points on the earth at that distance apart, and would, consequently, revolve round the vertical.* A beautiful modification has been suggested by M. Bravaes †, in which a perfectly circular motion is communicated to a pendulum; and the time of revolution will be different, according as its direction conspires with or opposes that of the earth. If all torsion in the thread could be got rid of, a ball simply suspended, and furnished with an index at its equator, would be seen to rotate. But the torsion destroys the effect: this is the suggestion of M. Baudrimont. ‡ But by far the most complete idea, not only of the general principle but of the law of the sine of the latitude, is obtained from the beautiful apparatus constructed by Mr. Wheatstone (fig. 10), in which the pendulum is replaced by the vibration of a coiled spring (*b d*), the axis of which can be placed in any required inclination or *latitude* with regard to a vertical semicircular frame (*a b c*), which is made to revolve about its vertical radius, and the direction of the vibrations is seen to change in a degree proportional to the sine of the latitude; as, for example, for lat. 30° the sine = ½; and, consequently, if the vibration be originally in the meridian, when the meridian has revolved 180°, the deviation = 180° × ½ = 90°, or is at right angles to the meridian.

Mr. Powell concluded by observing, that upon the whole the experiment is one of high interest and importance. Some discrepancies or difficulties in the different views taken of the theory, as well as in the observed results, seem to indicate that the subject, however apparently simple, has not yet been thoroughly worked out—and to point to the desirableness of further repetitions of the experiments, if possible in vacuo, and with increased precautions, as well as to a revision of the dynamical and analytical processes, by which, possibly, any seeming difficulties may be cleared up.

* Comptes Rendus, No. 14 † Comptes Rendus, No. 6
‡ Comptes Rendus, No. 8 See also a suggestion to the same effect, ILLUSTRATED LONDON NEWS, April 26th, page 326.

THE IMPROVED MODE OF TREATING FLAX.

WHETHER wool or Flax were first spun into threads and woven into cloth, is left doubtful by history; but the art of spinning is one of the most ancient, and one of the earliest materials spun, if not the very earliest, was Flax. The mummy-cloth of Egypt, chemically and microscopically examined by Dr. Ure, was ascertained to be wholly composed, both in warp and woof, of Flax, and contained no cotton whatever. Though cotton was probably first spun in Egypt, and was certainly spun at an early period, it was much later used than Flax for the purpose of making cloth. We may indeed infer that the art of spinning must have made considerable progress before cotton was spun. No doubt, the art took its rise from platting rushes together, then went to platting the finer fibres of the Flax plant, and from platting them to twisting them together to make a long thread. The downy and almost pulpy nature of cotton, keeping its filaments obscure to unaided vision, would not be likely to suggest the possibility of twisting it into a string, till that art had been learned by twisting together the long visible natural threads of Flax. Similar arguments apply to wool; and while history assures that Flax was spun long before cotton, we may infer from theory that it was also spun before wool.

After being applied to making cloth upwards of three thousand years, the same means of preparing it for this purpose having been in use for the whole time without much change, namely, rotting the plant in water, and separating by the heckle the woody and glutinous matters with which the fibres of the Flax stalk are united, an improved method of preparing Flax has lately been introduced. Many reasons, such as the unwholesomeness of the rotting process, the offensive qualities it imparted to the water, the weakening of the fibre, and the discoloration of the Flax, induced people years ago to turn their attention to the subject; and, though several patents were taken out, it remained to our time to effect any considerable improvement in the process. Latterly the failure for two successive years of the cotton crop in the United Sates, the large increase of our cotton manufacture, and the repugnance felt by some persons to have so much of the national prosperity dependent on the product of slave labour, has sharpened the wits of inventors, and Chevalier Claussen, a Belgian, has recently brought before the public a scheme by which Flax, the product of our temperate climate, for the growth of which Ireland and a large part of England are peculiarly well adapted, may be made to a considerable extent to supply the place of cotton.* On the great advantages of extending the cultivation of Flax; of the immense quantity of very fattening food it supplies for cattle; of the healthy employment it gives both out of doors and in doors, we need not say one word, those subjects having been fully brought under the notice of our readers in former Numbers of this Journal. We shall now only describe the additional advantages likely to accrue both to agriculturists and manufacturers from the proposed improved method of preparing the Flax for being spun after it has left the hands of the agriculturists.

From the nature of Flax, considerable difficulty is experienced in spinning it by machinery, and the greater facility with which cotton can be spun in this way is the principal reason why cotton cloth has come so extensively into use, and has in many cases superseded linen. Its peculiar properties, however, must always make it acceptable, particularly in warm climates, to a great multitude of people. The problem to be solved in this case was to make Flax as easy to spin by machinery as cotton, and to adapt it to the machinery already in use for spinning. It has been ascertained by microscopic observations that the fibre of Flax is of a cylindrical form, while that of cotton is flat like a ribbon, a little thickened at either edge. It is also shorter than the fibre of Flax. The process, therefore, mainly consists in converting the cylindrical and tubular fibres of Flax into flat ribands, without destroying their texture. To cleanse the Flax thoroughly, it is first boiled for about three hours in water containing one half per cent. of common soda. It is then placed in water containing about 1-500th part of sulphuric acid; and this destructive agent being neutralized by the soda remaining in the Flax, merely cleanses the fibre, without injuring it. The process is equally useful whether the Flax be spun by the ordinary processes into linen yarn or be converted into cotton-flax. It requires much less time than the old plan of cleaning, does not impart a bad colour to the Flax, and lessens by one half the labour required to scutch it. To convert it into cotton-flax, it is cut by a machine into suitable lengths, and is saturated in a solution of bicarbonate of soda (common baking soda). The solution penetrates into every part of the small tubes; and when that is effected, they are immersed in a solution of sulphuric acid, in the proportion of about one part to 200 parts of water. The acid combines with the soda of the bicarbonate, and liberates the carbonic acid in the form of gas, which, by its explosive force, bursts the Flax tubes, and reduces them to the flat ribbon shape of the cotton fibre. The process is so gentle, yet decisive and rapid, that it has been compared to magic. It is an extremely beautiful application of the power of explosion, as we see it bubbling and forcing its way through soda-water. "The Flax fibre," says Mr. Hudson, the secretary to the Royal Agricultural Society, who reports the experiment, "soaked in the solution of the bicarbonate of soda, was no sooner immersed in the vessel containing the acidulated water, than its character became at once changed from that of a damp, rigid aggregation of Flax to a light, expansive mass of cottony texture, increasing in size like leavening dough or an expanding sponge." The mass, now become of the consistence of cotton, soft and silky, can be bleached either in the ordinary method, or by being placed in hypochlorite of magnesia; it may be carded in the same manner as cotton, and is as fit for spinning. In this condition, it has already been spun on cotton machinery—as an experiment, but with great success—by the Messrs. Bright, at Rochdale; and there is every reason to believe that it may be used, if necessary, as a complete substitute for cotton.

There is at present no assignable limit to the cultivation of Flax, and therefore no assignable limit to the quantity which may be obtained. To produce it in large quantities, will be advantageous to farmers. They all ought to grow some Flax. At present prices it is shown that the cultivation of Flax, to be prepared by this method for spinning, yields a very great profit; but, knowing how fallacious such statements often turn out, we must rather warn our agricultural readers, whatever may be the present profits of Flax cultivation and of this mode of preparing Flax, that it cannot for any considerable period exceed the ordinary profit of cultivating land with other products, and the ordinary profit of supplying the market with cotton. As long as it exceeds the profit obtained by other cultivation, there will be a continual increase of the cultivation, and the profit obtained will in the end be reduced to the ordinary rate by one of those gluts from over production which every now and then carry ruin amongst the too active competitors for obtaining shares of any large extra and unusual supply of wealth. Nor can we recommend the scheme in a national point of view, because it substitutes flax for cotton, and tends to make the English, as is said, independent of the Americans or any other people. What is called dependence in trade is always mutual, the seller being as dependent on the buyer as the buyer is on the seller, and trade dependence is thus always mutual service. It knits individuals and nations together in friendship and peace. The really civil men are, in almost all cases, the men dependent on others for their living or their fortune; and to promote dependence, therefore, is to promote civilisation. For its own advantages, for the behoof of our own agriculturists and the agriculturists of Ireland, we cannot say too much nor do too much to promote the cultivation of Flax and prepare it for manufacture; but, when the whole course of civilisation is to extend trade and increase mutual dependence, let us not recommend it or engage in the cultivation from the notion that we shall thereby make England independent of the United States. In proportion as we effect that we make them independent of us, and tend to convert friends into strangers, perhaps into foes.

* "The Flax Movement," &c. Pamphlet, by Chevalier Claussen. Effingham Wilson, Royal Exchange.

LITERATURE.

ELEMENTS OF ELECTRO-METALLURGY. By ALFRED SMEE, F.R.S. Third Edition. Longman and Co.

In the preface to this new edition of Mr. Smee's valuable work, he has contented himself with adding some account of the processes and experiments which have been carried on by others: from which source alone the volume has been increased about one-sixth in bulk. The author adds:—

"The first and second editions held out prospective advantages to the manufacturer; the present enables us to take a review of that which electro-metallurgy has absolutely effected. In the former editions, the economical relations of the subject were so carefully considered, that it has given me great pleasure to find that the stimulus of remuneration has been so effective that electro-metallurgy in no way falls short of the sanguine expectations then formed of it, but, on the contrary, has actually advanced in more extended spheres of operation."

We quote the following process and application of the disruptive discharge to the etching of steel, or *Electro-disruptive Etching*:—

"It is well known that when the connecting wires of a battery are brought together, a spark ensues, and portions of that piece of metal communicating with the silver are transferred to that metal communicating with the zinc. To Dr. Pring is due the merit of having first brought this fact into practical use for the purpose of engraving the hardest steel. This gentleman fixes the plate to be engraved in a small hand-vice, such as is used by watch-makers; this plate is then connected with an electro-magnetic coil, which is again connected with the zinc of about half-a-dozen moderate-sized platinized silver batteries. To another wire, attached to the platinized silver, is joined a wire of platinum or of gold, which it is found convenient to fix in a crochet needle holder. When this wire is brought into contact with the steel plate, a portion of the latter is thrown bodily off and transferred to the etching tool, and thus by electro-mechanical skill a perfect device can be made upon the hardest steel.

"If the plate and graver be attached to the reverse plates of the battery, then the wire is transferred, and a gold or platinum design is effected; but this result only takes place well in the purest steel, and the steel around the deposit is charred and burnt.

Dr. Pring's process is at present a scientific curiosity of high interest; it bears the same relation to the arts now as the first electro copies of penny-pieces did many years ago; in it is involved, however, a new application of a scientific fact, and on being thoroughly worked out may be, for aught we can tell, applicable to the die-sinker and other branches of the arts, and is now applicable to imprint the most beautiful designs on swords and steel instruments of every description made of hardened steel, which would, by any other process, be difficult to engrave.

"The electro-disruptive etching is totally distinct from voltaic etching. In the latter, the voltaic force assists chemical affinity, and the metal is dissolved. In the former, the aggregation of the particles of metal is interfered with, and portions are thrown out. In the one case we act, therefore, by interfering with the attraction of chemical affinity; in the latter, by interfering with the attraction of cohesion. This process was submitted to the Royal Society in 1846; and, with the peculiar wisdom for which that greatest association of philosophers in Europe are particularly notorious in their corporate character, it was allowed to slumber, and, from the circumstance of the inventor living in the country, it is even up to the present time but imperfectly known. The specimens which I have seen are extremely beautiful, and I hear that very interesting examples will be shown at the Great Exhibition."

As the Text-book of Electro-metallurgic Science, Mr. Smee's work possesses high value, more especially as the author almost invariably writes from his own knowledge, and has actually witnessed the processes which he details—the highest recommendation which can be accorded to any work of experimental character.

THE LAND STEWARD. By G. A. DEAN, Agricultural Architect and Engineer. Atchley and Co.

The title given to this useful work is calculated to give rise to humiliating reflections respecting the fitness of the major part of persons entrusted with the management of the extensive estates of our large landed proprietors.

A severer satire on the majority of land-stewards for the occupation which they follow could scarcely be framed, than the fact that an individual in the second half of the nineteenth century should deem it requisite to draw up a book for their especial guidance and tuition, on such subjects as "the geological structure, soil, and climate of the United Kingdom, considered in relation to agriculture," "the structure, texture, mineral composition, chemical analysis, physical properties, &c of soils." A person unacquainted with agriculture and the management of estates would naturally suppose that every land-steward had a full knowledge of these subjects prior to entering on such an occupation: this is, however, a complete delusion; for, of those holding the office of land-steward, and brought up to the occupation of agriculture, exceedingly few know anything of their occupation beyond a knowledge of former precedents, a scientific knowledge of their profession being more commonly despised than esteemed. Having stated this of land-stewards who have received a rudimentary education in agriculture, how much more does the remark apply to the numerous land-stewards who are lawyers, half-pay military and naval officers, &c.—men who scarcely know the right end of a hay-fork; yet to the latter class of men the management of the most extensive properties in England are entrusted, and on such estates the cry for protection to agriculture will generally be found the loudest.

The author is, therefore, perfectly correct in addressing his work to the land-stewards. We may add, however, that it will be read to most advantage by landowners, for the practice of entrusting the management of landed property to incompetent parties is greatly owing to the ignorance existing on the part of proprietors of what is really required on the part of persons occupying the responsible situation of land-stewards: to small proprietors who look after the management of their own estates this work will be found of the greatest value, conveying, as it does, instruction on all important points relating to land management; the working farmer will derive advantage also from the study of its contents.

Our author very justly remarks in the introduction to his work: "That landed property may be profitably improved, it is requisite that not only the tenant but the agent should have a thorough knowledge of practical agriculture; for, as the largeness of the majority of estates in this country and the habits of society lead the great mass of landowners to entrust the management of their property to their agents, and the cultivation to their tenants, it is most important that the agent be qualified to carry out, on the principles of equity, the terms of occupation; for otherwise, however well-intentioned he may be, he will inflict an injury upon his employer or his tenant." In the chapter on climates the author judiciously observes, that, "in deviating from the system of farming generally pursued, or in introducing a new system into any particular district, great caution is requisite, one most important consideration being climate. It is climate which governs the productions of all countries, and he who bestows upon it the greatest consideration will cultivate the soil most profitably."

The articles on drainage and irrigation are illustrated with some instructive sections. The author being already favourably known for his essays on farm buildings and labourers' cottages, it may be supposed that these are not overlooked; in fact, his observations on the former will receive attention from all who peruse his work, characterised as this section is by his clear views on the subject and excellent isometrical drawings and ground-plans. To persons about to purchase property having old dilapidated buildings thereon, we commend the judicious observations of the author.

THE DREAMER and the WORKER. A Story of the Present Time. By R. H. HORNE. Two vols. Colburn.

We have here a delightful book, and, notwithstanding the contrary impression conveyed by the title, a reconciling one. Its tendency is not so much to illustrate the antagonism between the Dreamer and the Worker, as the points of contact and agreement. The theme is charmingly treated. Out of the suggestions of the Dreamer come the operations of the Worker; the latter being but the embodiments of the idea contained in the former. The dream is adopted by the worldly and the speculative, succeeds or fails in their hands, and is then carried out to its results by those whose industry substitutes capital. With all this is blended a delicious tale of love. How the Dreamer raises the mind of the Worker to the beauty that he is himself idolizing; how the woman in whom it is idolized feels the imperfection of herself as its representative; how, with the noblest self-devotion, she seeks a humbler mate in the mechanic, whose mind, elevated by the visionary, is made to approximate to her own, which occupies, as it were, a mid-point between the practical and the ideal; and how, in the circle of friendship, a more fitting shrine for the beautiful, after the poet's idea of it, is found for the Dreamer himself: all this the story presents with admirable tact. The style of these volumes is light, airy, and sparkling, flowing, easy, and narrative. Mr. Horne, too, shows no mean power of caricature in some of his portraits: and he makes us laugh as well as think. The moral is of the noblest—demonstrating the mutual necessity the Dreamer and the Worker have for each other. So far as it enforces the need of poetic taste as an element in the education of the working classes, so that the leisure of the labourer may be as capable of devotion to the beautiful, as his industry is in the elaboration of the useful, this production is likely to be of inestimable benefit. At any rate, the work is consecrated to the service of the intelligent artisan; whose condition may it help to improve, to elevate, and to set free from all social discomforts, while it expands the Workman into the Man.

MADAM DORRINGTON of the DENE: the Story of a Life. By WILLIAM HOWITT, 3 vols. Colburn.

This is one of Mr. Howitt's best novels, painting the country life of the wealthy in England some half-century ago with full knowledge and great dramatic skill. It is the romantic made out of the real, and bears evidence of the fact in every line. Mr. Howitt describes from experience. His characters are actual individualities. Madam Dorrington herself is the type of charitable ladies—an angel of blessing to a rural neighbourhood. Mr. Howitt has invested the whole scene with attributes of beauty. The descriptions of the Dene, the nest, and the bee-swarming, at the commencement of the tale, are all charming.

In a certain sense an enthusiast and a mystic, Madam Dorrington presents a soul for the analysis of her romancer. But Mr. Howitt does not "murder, to dissect." He presents her, a living being, uninjured, and in the very habit in which she must have appeared to his actual vision. The benevolent gentlewoman beams out in every line, and makes a "sunshine in the shady places," which she was wont to haunt as their genius and guardian spirit.

"In fact, Mrs. Dorrington was the Eve of Westwood; and though in the retirement of a secluded country, never knew what it was to be in want of occupation. By the sick-bed of the cottage, or the farm-house, by the bed of death, or in the hours of domestic ease and peace, she was a welcome and a cheering visitor, and had generally some thorn of human care to extract, or some ruffled current of life to cast the veil of reconciliation upon. Such were her occupations and pleasures; and an unceasing pleasure to her was the enjoyment of the country itself, with all the changes and developments which the onward roll of the seasons produced. Flowers and the music of birds were to her the most exquisite gratifications. She regarded flowers as revelations of heavenly beauty—she heard in birds' songs the language of a life to us yet but dimly known. She watched the growth, bloom, and decay of every flower, from the earliest primrose to the latest sad though gorgeous blooms of autumn. There were little gates and a footpath down the Dene to the very heath in the distant valley, which permitted her, at any hour, to ramble through their own sheltered and beautiful fields; and many were the hours which she spent in watching the wild creatures in their haunts, and wondering at the singular forms, passions, and fancies that the great Creator has diffused through even feathered and furry heads. To her the harmless snake, coiled on a stump, amid fragrant herbs, or the dashing wild flight of the blue dragon-fly, as if giddy with an unknown joy, were sources of a profounder pleasure than the midnight drawingroom, crowded with the great and gay of fashionable life, ever conferred on coronetted beauty. Here she was alone with peace and the works of God, with no envy or heartlessness of man thrusting themselves between."

This angel of a woman, with no fault but her excessive ideality, is united to a man practical in the extreme. From their disparity of disposition, arise unpleasant consequences; trials of the heart, temptations, and triumphs of the redemptive process.

The interest of the tale lies with the son, by name Vincent, of this worthy couple; but absent for five long years on his travels, and thus enlarging his mind beyond the limits of theirs. All this is exquisitely managed.

But the whole picture is not thus set in the light of the affections. There is shade as well. We fear that the shade is too sombre. The form of Elizabeth Hinchcliffe sheds too dark a gloom. But we will not find fault. The novel is excellent in plan and treatment, and its style and diction are exquisite.

ROSE DOUGLAS; or, Sketches of a Country Parish. Being the Autobiography of a Scotch Minister's Daughter. By S. R. W. 2 vols. Smith, Elder, and Co.

A quiet domestic tale, told with charming simplicity. There is, however, one striking contrast in this simple story; the pastoral mode of life in the country parish, and that of the mercantile nature in cities, are skilfully as well as antagonistically depicted. The reverence in which, in the former, the purely spiritual is held; the absorbing pursuit of wealth, in the latter, are opposed with striking effect. The lonely girl becomes an orphan, is made in the house of the mercenary relative to feel the curse of dependence, from which, however, Providence at length delivers the sufferer. The modest style of the book enhances its pathos; and, such is the sterling quality of the writing, every page of it will be read.

DIORAMA OF JERUSALEM AND THE HOLY LAND, HYDE-PARK CORNER.

WE have engraved one of the most effective scenes from this very interesting exhibition. It shows the venerable Pool of Siloam, and in this view the *dioramic* success of the picture is better seen than in any other portion of the painting. In the Explanation, entitled "A Pilgrimage through the Holy Land," it is observed:—

No spot about Jerusalem has a more venerable interest than this Pool. The Prophet Isaiah refers to the "waters of Siloam that go softly"—well descriptive of the gentle murmur of the stream that runs in a shallow current across the basin. Milton speaks of

Siloa's brook that flowed
Fast by the oracle of God.

The blind man whose sight was restored by Jesus was ordered to wash in the pool of Siloam. The water that flows through this Pool, as before stated, is conducted by a channel from the fountain of the Virgin, already noticed. The walls of the city tower in the background—Mount Zion being at the left-hand extremity of the picture.

We annex a few additional particulars of the hallowed site:—

The name of Siloah or Siloam is found only three times in Scripture as applied to water; once in Isaiah (viii. 6), who speaks of it as running water; again, as a pool, in Nehemiah iii. 15; and lastly, also as a pool, in the account of our Lord's healing the man who had been born blind (John ix. 7-11). None of these passages affords any clue to the situation of Siloam; but this silence is supplied by Josephus, who makes frequent mention of it as a fountain (De Bell. Jud., v. 4, § 12), and indicates its situation at the mouth of the valley of Tyropœon, where the fountain, now and long since indicated as that of Siloam, is still found. He describes its waters as sweet and abundant. Jerome (Comment. in Esa viii. 6), indicating its situation more precisely, also mentions its irregular flow—a very remarkable circumstance, which has been noticed by most subsequent pilgrims and travellers. This assures us that the present fountain of Siloam is that which he had in view; and that it is the same to which the Scriptural notices refer, there is no reason to doubt. The pool of Siloam is within and at the mouth of the valley of Tyropœon, and about eighty paces above its termination is that of Jehoshaphat. The water flows out of a small artificial basin under the cliff, the entrance to which is excavated in the form of an arch, and is immediately received into a larger reservoir, 53 feet in length by 18 feet in width. A flight of steps leads down to the bottom of the reservoir, which is 19 feet deep. This large receptacle is faced with a wall of stone, now slightly out of repair. Several columns stand out of the side walls, extending from the top downward into the cistern, the design of which it is difficult to conjecture. The water passes out of this reservoir through a channel cut in the rock, which is covered for a short distance; but subsequently it opens and discloses a lively copious stream, which is conducted into an enclosed garden planted with figtrees. It is afterwards subdivided, and seems to be exhausted in irrigating a number of gardens occupied with figs, apricots, olive and other trees, and some flourishing legumes. The small upper basin or fountain excavated in the rock is merely the entrance, or rather the termination of a long and narrow subterraneanean passage beyond, by which the water comes from the fountain of the Virgin. This has been established beyond dispute by Dr. Robinson, who, with his companion, had the hardihood to crawl through the passage. They found it 1750 feet in length, which, owing to its windings, is several hundred feet more than the direct distance above ground. It is thus proved that the water of both these fountains is the same, though some travellers have pronounced the water of Siloam to be bad, and that of the other fountain good. It has a peculiar taste, sweetish and very slightly brackish, but not at all disagreeable. Late in the season, when the water is low, it is said to become more brackish and unpleasant. The most remarkable circumstance is the ebb and flow of the waters, which, although often mentioned as a characteristic of Siloam, must belong equally to both fountains. Dr. Robinson himself witnessed this phenomenon in the fountain of the Virgin, where the water rose in five minutes one foot in the reservoir, and in another five minutes sunk to its former level. The intervals, and the extent of the flow and ebb in this and the fountain of Siloam, vary with the season; but the fact, though it has not yet been accounted for, is beyond dispute.

We are happy to learn that the exhibition continues to increase in popular favour, as its artistic merits and the superior interest of its scenes and sites become more extensively known.

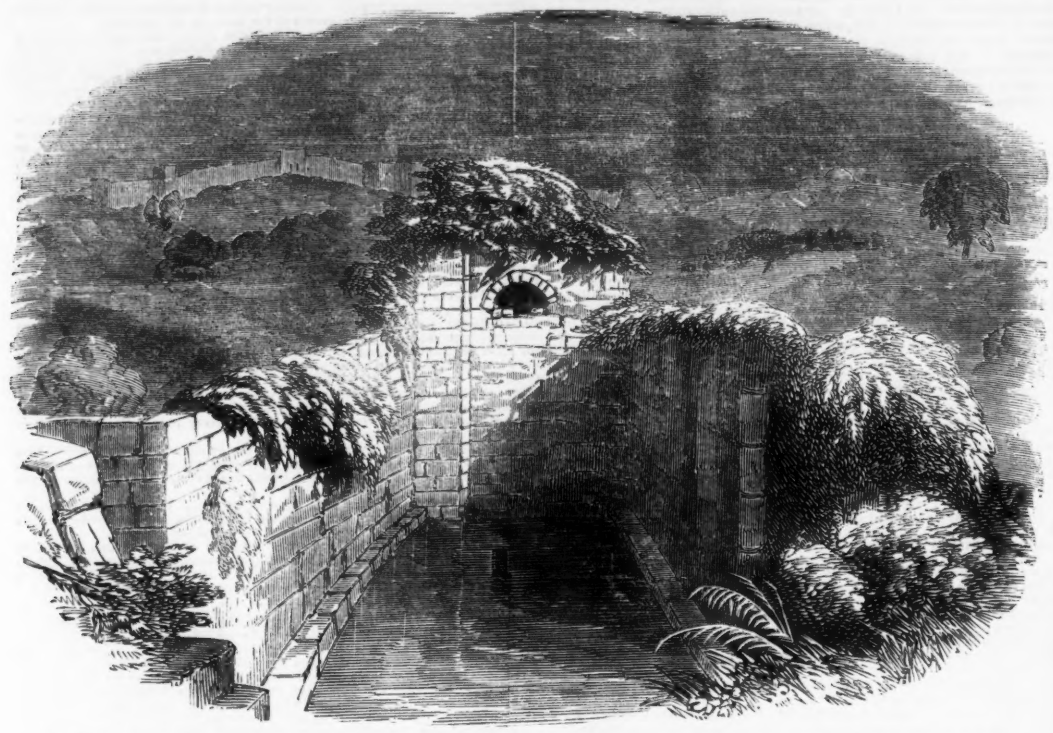
THE TAJ MEHAL.

THE addition made to the Diorama of the Overland Mail to India, of the celebrated Mausoleum known by the title of the Taj Mehal, cannot fail to be attractive. Of this fine edifice three views are given, all beautifully painted. They consist of—1. The gateway called the Keilan Durwasa, as seen from the centre of the spacious gardens. 2. The interior of the building, shewing the marble screen and elegiac mosaics round the tomb of the Emperor Shah Jehan and his imperial mate, represented as seen in the days of the great Moguls, by light of lamps. 3. The exterior of the tomb itself, and one of its detached mosques. The last view is a moonlight scene, very richly executed, taken from a sandbank on the opposite side of the river Jumna. This magnificent building ought to have peculiar charms for the ladies, particularly those who are married or intending to be so—for it was erected by the Emperor himself, already named, as a tribute to the virtues of his wife. Assuch, it is an incomparable work—one of the world's wonders in fact, and "surpasses," as the bills say, "every earthly testimonial to the virtues of a wife raised by an affectionate husband." The lady's name was Mum Taza Zamanie ("the most exalted of her age"). The mausoleum is built on the Agra side of the river Jumna, three miles and a half from the fort and palace of the Great Mogul. The diorama, which is exhibited at the Gallery of Illustration, Regent-street, is accompanied with descriptive detail and appropriate music. For the drawings of the Taj Mehal, the public are, we understand, indebted to Captain W. Barnett.

THE SHOE-BLACK BRIGADE.

A QUARTER of a century has scarcely passed away since the Shoeblacks disappeared from the streets of our metropolis. Mr. Charles Knight, in one of his piquant contributions to his own "London," names Bolt-court, Fleet-street, as the location of the last of the Shoe-blacks; but we have a distinct recollection of Johnson's-court as his accustomed *stand*.

The Shoe-black belonged to a trade which has its literary memorials.



SCENE FROM THE MOVING DIORAMA OF "JERUSALEM AND THE HOLY LAND."—THE POOL OF SILOAM.—(SEE PRECEDING PAGE.)

In 1754, the polite Chesterfield and the witty Walpole felt it no degradation to the work over which they presided, that it should be jocose about his fraternity, and hold that his profession was more dignified than that of the author:—

"Far be it from me, or any of my brother authors, to intend lowering the dignity of the gentlemen trading in black ball, by naming them with ourselves: we are extremely sensible of the great distance there is between us: and it is with envy that we look up to the occupation of shoe cleaning, while we lament the severity of our fortune in being sentenced to the drudgery of a less respectable employment. But while we are unhappily excluded from the stool and brush, it is surely a very hard case that the contempt of the world should pursue us, only because we are unfortunate."—*The World*, No. 57.

This is pleasant banter, though it may have helped to perpetuate a popular error as to the condition of authors in the present day, but cleverly corrected at the Literary Fund festival on Monday week, when Mr. Thackeray repudiated that pity which so many people, taking their cue from the degraded literary hacks of George II., are so very much disposed to bestow upon them. "The patron and the gaol" have alike ceased to be words of fear in the ears of the literary men of England.

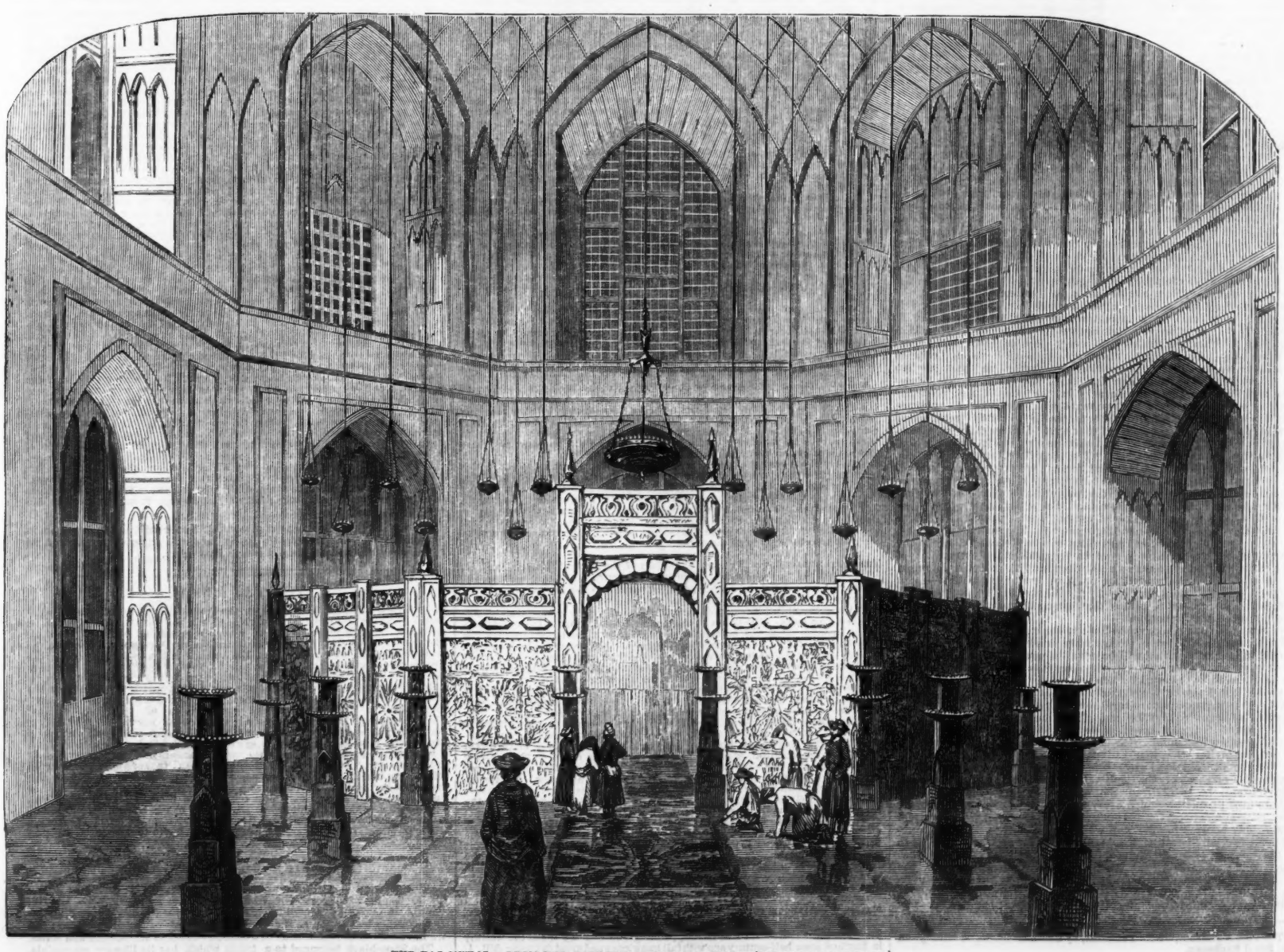
Gay makes his "black youth's" mythological descent from the goddess of mud, and his importance in a muddy city, the subject of the longest episode in his amusing "Trivia." The shoe-boy's mother thus addresses him:—

So thrive: at some frequented corner stand;
This brush I give thee, grasp it in thy hand;
Temper the foot within this vase of oil,
And let the little Tripod aid thy toil;
On this methinks I see the walking crew,
At thy request support the miry shoe;
The foot grows black that was with dirt embrown'd,
And in thy pocket jingling halfpence sound.
The goddess plunges swift beneath the flood,
And dashes all around her showers of mud:
The youth straight chose his post; the labour ply'd
Where branching streets from Charing-Cross divide;
His treble voice resounds along the Mews,
And Whitehall echoes—"Clean your honour's shoes!"

The cry is no more heard; but the professional Shoe-black has reappeared in our streets, possibly suggested by the great influx, this season, of visitors from the Continent, where boot-cleaning is carried on in well-appointed shops: the Parisian, for example, occupies a velvet-covered seat, and reads the newspaper, while his vaunted boots are re-polished. In London, the black revival is under different auspices, being, in fact, a measure of the enlarged philanthropy of our times, the common-sense of which consists in employing the unemployed. The Shoe-black Brigade is an offshoot of the Ragged School system, and is a sensible provision for an obvious want in a well-dressed capital. Each of the members of the Brigade wears a number, and is accountable for his conduct: his coat is scarlet, which is characteristic of a brigadier, but may possibly shock the tender nerves of the Peace Society more than would the items of an Ordnance estimate, and may likewise give offence to the sensitive class of politicians who, in every floating feather, see a standing army. Bating this inappropriateness of warlike costume for a very peaceable employment, the Shoe-black Brigade is entitled to our commendation; and the

THE SHOE-BLACK BRIGADE.

accompanying portrait may serve to direct the reader's attention to one of the many social novelties of the Annus Mirabilis 1851. The charge for cleaning is 1d. each person: there are 24 in the brigade, and to each is given 8d. of every 1s. received.



THE TAJ MEHAL.—FROM THE GALLERY OF ILLUSTRATION.—(SEE PRECEDING PAGE.)

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